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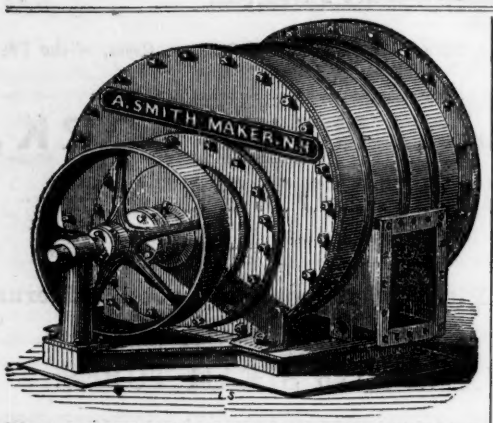

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A. B. Wood, Agt. Reading Iron W'ks, 57 Maiden l'e, N.Y.
Cornelius Baker, manufacturer of gas fixtures, Phil'a.

G. B. WATERHOUSE. M. BOWES.

FELLOWS, HOFFMAN & Co.,

(Late STARR, FELLOWS & Co.,)

MANUFACTURERS OF

GAS FIXTURES AND CHANDELIERS,

Solar, Camphene and Fluid Lamps,

GIRANDOLES, HALL LANTERNS, &c.,

No. 74 Beekman Street - - - - New York.

JOHN B. MURRAY,

BANKER,

Iron Building, No. 254 Canal Street, East, (corner Elm Street,) near Broadway,

NEW YORK CITY,

DEALER IN

GAS-LIGHT STOCKS OF CITIES.

The accounts of Country Banks and Bankers received on liberal terms.

Interest allowed on Deposits by special agreement.

COLLECTIONS

Made throughout the UNITED STATES, CALIFORNIA, CUBA, the BRITISH PROVINCES, SOUTH and CENTRAL AMERICA.

DRAFTS issued for large or small sums payable at banks in every city and town in the United States.

F. BUTTS & CO.,

GAS-COAL DEALERS, CLEVELAND, OHIO.—The attention of gas companies is called to the following analysis of Sterling Coal, which is mined and sold exclusively by us:

CLEVELAND, May 17th, 1859.

ANALYSIS OF "STERLING COAL."

Sp. gr.	1.288
Hygrometric moisture,	1.85
Volatile combustible matter,	34.15
Coke, (clear and porous,)	64.00
	100
Fixed carbon in the coke,	62.00
Ashes, (yellowish white,)	2.00
	64.00

COMPOSITION OF ASHES.

Silex,	0.80
Alumina,	0.45
Peroxide of Iron,	0.85
	2.00
Percentage of sulphur,	0.28

J. L. CASSELS, M.D.,
Prof. of Chemistry, Cleveland Medical College.

P. S.—The specimen from which the above analysis was made, was taken by myself from a car load, and may be regarded as a fair average; in fact, this coal is very uniform in its characteristics. It also yielded four per cent. more gas than the Pittsburgh coal.

J. L. C.

This coal is used by the following gas-light companies, and to whom reference can be made, as to quality, &c.:

Manhattan Gas-Light Company,	New York		
New York	"	"	"
Albany	"	"	"
West Troy	"	"	"
Rondout	"	"	"
Elmira	"	"	"
Seneca Falls	"	"	"
Rochester	"	"	"
Albion	"	"	"
Oswego	"	"	"
Brockport	"	"	"
Cleveland	"	"	Ohio.
Toledo	"	"	"
Sandusky	"	"	"
Grand Rapids	"	"	Mich.
Kalamazoo	"	"	"
Ann Arbor	"	"	"
Milwaukie	"	"	Wis.

For further information, address

F. BUTTS & CO.,
Cleveland, Ohio.

GAS COAL.—PENN COAL CO.

THE PENN COAL COMPANY HAVING COMpleted arrangements for mining and shipping Coal on an extensive scale, are now prepared to receive orders. The mines are favorably located on the line of the Pennsylvania Railroad, 26 miles east of Pittsburgh, Pa. The coal has been tested by many gas works, and the highest testimonials will be furnished. Communications addressed to Mr. A. L. Massey, Philadelphia, will have immediate attention.

OFFICIAL.

New York State Inspector of Gas Meters,

OFFICE No. 561 BROADWAY.

Gas Meters proved since 4th May, 1859	14,860
Number of proving apparatus tested	36

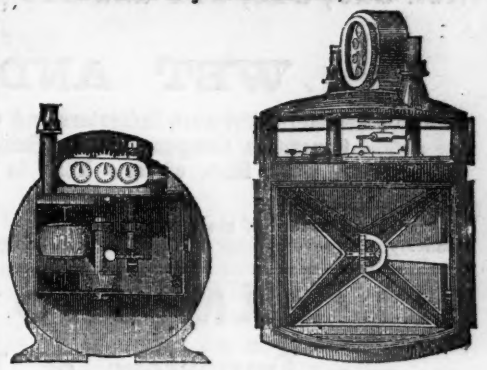
NEW YORK, December 31, 1859.

GEORGE H. KITCHEN,
State Inspector

HARRIS & BROTHER'S

Improved Dry Gas-Meter,

Patented May 17th and 31st, 1859.

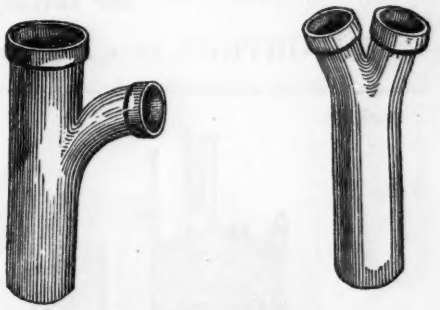


HARRIS & BROTHER,

MANUFACTURERS OF EVERY DESCRIPTION OF

GAS-METERS AND GAS-APPARATUS,

No. 1117 Cherry St., Philadelphia.



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90 BEAVER STREET, NEW YORK CITY,

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FOR WATER AND SEWER PURPOSES,

FROM 3 TO 36 INCHES DIAMETER,

FIRE BRICKS, VENT AND LININGS,

AND ALL DESCRIPTIONS OF

FIRE-CLAY MANUFACTURES.

NEW YORK GAS BURNER CO.,

346 BROADWAY, ROOM 18, APPLETON'S Building,

Manufacture to order L. E. Hicks' Patent Gas Burner for Lighting Streets, Steamboats, Railroad Cars, Churches Theatres, Stores and Private Dwellings.

This burner has been subjected to every known test, of the justness of its claims in repeated instances, and by competent persons, and had the unqualified approval of the late Professor W. H. Ellet, chemist to the Manhattan Gas-Light Company, and of Mr. J. K. Brick, Superintendent of the Brooklyn Gas-Works. The experiments of these gentlemen prove that its "economy" over ordinary burners in the consumption of gas, for equal illuminating powers, is in the ratio of 232 to 100.

We think this array of authority at least entitles our new burner to a full and fair trial.

MORRIS, TASKER & CO.,

PASCAL IRON WORKS,

[Established 1821.]

PHILADELPHIA,

MANUFACTURE

WROUGHT IRON WELDED TUBES,

For Gas, Steam or Water.

LAP-WELDED BOILER FLUES.

Galvanized Wrought Iron Tubes.

ARTESIAN WELL PIPES,

Of Wrought or Cast Iron, screwed together, flush inside and out.

Gas Works Castings,

RETORT AND BENCH CASTINGS FOR COAL GAS WORKS.

CAST IRON STREET MAINS,

Bends, Branches, Drips, &c.

Gas and Steam Fitters' Tools, &c.

STEPHEN MORRIS, THOMAS T. TASKER, JR., CHAS. WHEELER. STEPHEN P. H. TASKER.

SAMUEL DOWN,

Nos. 340, 342, 344 and 346 West Twenty-second Street, North River, NEW YORK CITY,

MANUFACTURER OF

WET AND DRY PATENT GAS-METERS,

Pressure-Registers, Pressure-Indicators and Gauges, Station, Show, Customer, and Experimental Gas-Meters, Centre or Hydraulic Valves, Governors, Compensators for Exhausters, and the Standard Testing Gas-Holders* for Proving Meters, now used in the State of New York in compliance with an Act of the Legislature. Also, Bunsen's Photometer, with complete Apparatus for working the same.

* The standard of measurement of this Gas-Holder is given by Professors TORREY, of the U. S. Assay Office; JOY, of Columbia College; GIBBS, of the Free Academy, with several other distinguished scientific gentlemen.

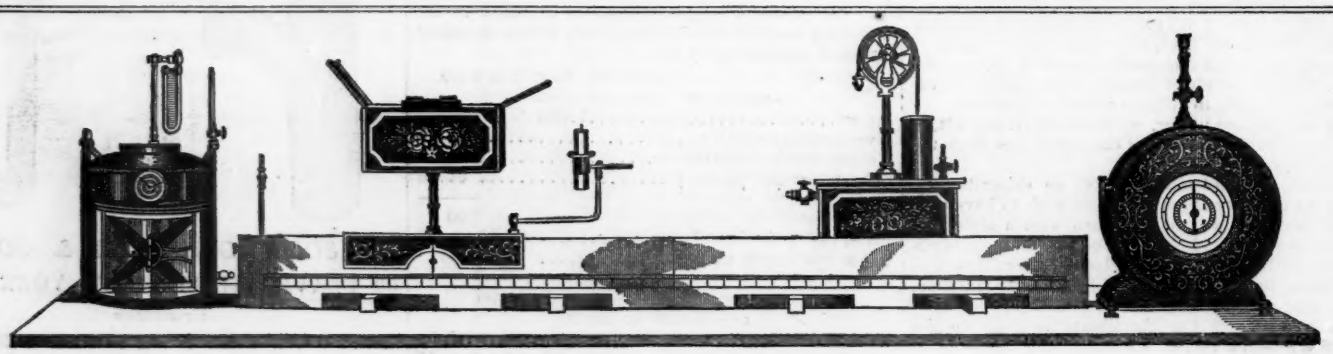
ELLIMAN BROTHERS, 217 Pearl Street, NEW YORK,

Importers of Belgian Fire-Clay GAS RETORTS,

AND DEALERS IN

Tiles, Arch-Bricks, Furnace-Doors, Mouth-Pieces, Covers, and all other Fittings, of most approved patterns, for setting Clay Retorts, Exhausters, Compensators, Valves, &c.

IMPORTERS AND DEALERS IN WROUGHT-IRON GAS, WATER, AND STEAM TUBES.



PRESSURE REGISTERS,

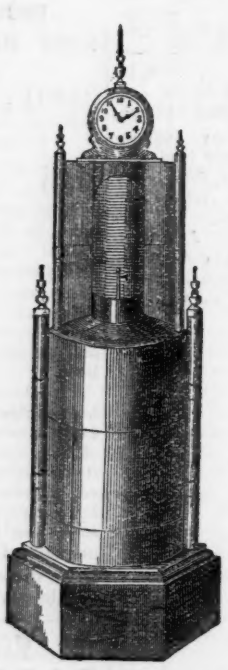
PRESSURE INDICATORS,

PRESSURE GAUGES,

PHOTOMETERS,

GOVERNORS,

STATION METERS,



CUSTOMER METERS,
(Wet and Dry.)

EXPERIMENTAL METERS,
(Wet and Dry.)

SHOW METERS,
(Wet and Dry.)

METER PROVERS,

CENTRE SEALS,
&c. &c. &c.

THE high reputation which we have enjoyed for more than twenty-two years, and the fact that we have manufactured a greater number of Gas Meters than all manufacturers in this country combined, must present itself as a security to parties who are desirous of securing the most reliable instruments. Having completed an extensive addition to our factory, and added many important improvements to our machinery, we are enabled to fill orders intrusted to us with dispatch, and in all cases *guarantee entire satisfaction.* Our Patent Rotary Valve Dry Gas Meter is now used by upwards of two hundred gas companies, giving general satisfaction; we therefore recommend it, believing it superior to any other Dry Gas Meter manufactured. All meters tested separately by a sworn Meter Inspector, and sealed when desired.

CODE, HOPPER & GRATZ,
1500, 1502, 1504 FILBERT STREET,
PHILADELPHIA.

GEORGE WRIGHT & CO.'S

LIVERPOOL AND NEWCASTLE CANNEL AND COAL,

FOR GAS MANUFACTURE AND HOUSE USE.

THE undersigned does not submit for comparison the result of chemical analysis, as this plan is too often adopted to promote the sale of inferior or worthless coals that in practice bear no particle of resemblance to their theoretical, and sometimes distorted descriptions.

He is authorized, however, to guarantee *the careful shipment of the best qualities of cannel and coal, at the lowest rates of invoice and freight offered at time of engagement;* and any losses sustained by short weight, or the neglect of the conditions mentioned, will be promptly and cheerfully repaired.

OFFICE OF THE MANHATTAN GAS-LIGHT COMPANY,
New York, October 8th, 1859.

Messrs. GEORGE WRIGHT & Co., Liverpool:

Gentlemen,—For many years you have acted as agents for this company, purchasing for, and forwarding to them, coals, retorts, and other gas apparatus.

Your experience, ability, and sterling integrity, entitle you to and have secured our confidence, and we cheerfully recommend your house to all gas companies desiring the services of an agent in England. My own personal knowledge of the superior quality of the coals within your control, and my acquaintance with the manufacturers of such articles as can be advantageously procured by you in England for gas companies abroad, added to my high regard for you personally, induce me to write this letter, and to expres the hope that you may be able to extend your business in this country, not only for your own advantage, but also for the benefit of those who may confide in you as securely as we have done.

I am, gentlemen, your very obedient servant,

CHARLES ROOME,
President.

T. W. PARMELE, Agent,
No. 4 Irving Place, New York.
GAS EXHAUSTERS,
GOVERNORS, FURNACE DOORS,
RETORT COVERS CASTINGS,
IMPLEMENTS,
PHOTOMETRICAL AND METER PROVING APPARATUS.

E. V. HAUGHWOUT & CO.,
488, 490, & 492 BROADWAY,
Corner of Broome Street,
NEW YORK,
CONTRACTORS AND BUILDERS
OF
GAS WORKS.
N. TREADWELL, SUPERINTENDENT.

They respectfully refer to the following gas works, which have been erected by them, and are now in successful operation:

Fifth Avenue Hotel,	N. Y.	Gayoso House,	Memphis, Tenn.
Store 488, 490 & 492 Br'dway,	N. Y.	Dement House,	Fulton, Ill.
Haverstraw,	N. Y.	Nyack,	N. Y.

And the following by Mr. Treadwell:

Springfield Gas-works,		Mass.	Thompsonville Gas-w'ks,		Ct.
Milford	do.	"	New Britain	do.	"
Clinton,	do.	"	Norwalk	do.	"
Ware	do.	"	Norwich	do.	"
Glasgow Mills,	do.	"	Canelton,	do.	Ind.

Read the following certificate—

The New Britain Gas Works, constructed under the personal superintendence of Mr. N. Treadwell, of Springfield, Mass., have been recently put in operation, and found all that could be desired. The Company are entirely satisfied with these works and would most cordially recommend Mr. Treadwell as a competent and successful gas engineer.

S. L. STRICKLAND,
President New Britain, Ct., Gas Co.

Messrs. E. V. Haughwout & Co. have on hand a most extensive assortment of the newest and most desirable styles of

CHANDELIERS, BRACKETS, LAMP POSTS, AND GAS FIXTURES OF EVERY DESCRIPTION,

To which they would respectfully call the attention of the public.

Gas-fitting done in the most workmanlike manner, and on reasonable terms.

JOHN COX & CO.,
IMPORTERS OF FRENCH AND ENGLISH GAS Fixtures of every description, Paris Clocks, Real Bronzes, &c. Manufacturers of Silver Ware. No. 696 Broadway, corner Fourth street, New York.

PARAGON SELF-GENERATING
GAS-LIGHT BURNER,

Complete in itself, without other machinery. Applied with founts to gas-fixtures in every variety; also, to hand-lamps, such as use oil, burning fluid, coal oils, &c., making its own gas in the burner, *with entire safety from burning fluid.* Devoid of smell, smoke, or flicker; combining simplicity, economy, and brilliancy of light in any temperature; adapted to and used by churches, factories, dwellings, hotels, steamers, railroad cars, omnibuses, private carriages, street-lamps, &c., &c.—all at an expense of less than one cent per hour each burner. Call and see this light for the million, or send for circular.

BUTLER, HOSFORD & CO.,
171 Broadway, N. Y.

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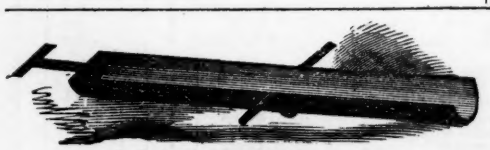

Coal-Scoop for filling Retorts.

Coke-Barrow.

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MANUFACTURERS OF
COAL-SCOOPS AND COKE-BARROWS FOR GAS-WORKS,
Furman Street, near Fulton Ferry, Brooklyn, N. Y.

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GAS AND STEAM FITTER AND PLUMBER, Nos. 170 and 172 Centre Street, (next door to N. Y. Gas Co.'s office,) New York. Pipes inserted in Churches, Factories and Dwellings; Chandeliers Regilt; Jobbing promptly attended to.

JOHN B. MURRAY'S

TABLES of AMERICAN GAS-LIGHT COMPANIES, Corrected December 31, 1859.

No.	Chartered.	Town.	State.	Chart'd Capital.	Per Sh.	Sem An'l Div.	Dividends payable.	Population of Gas District.	Private Meters.	Public Lamps.	Price 1,000 feet.	President.	Secretary.	Engineer.	Superintd't.	Clay or Iron Ret'ts.	Rosin or Coal.	Wet or Dry Lime.	Cement or Lead Joints.
				$															
1	1857	ADRIAN	Mich.	50,000	50		May & Nov.	4,000	275	30	3 50	B. Barker	S. B. Barker	Same	Same	C & I	C	W L	L
2	1856	AKRON	O.	20,000	33⅓		Do.	3,500	120	22	3 00	H. S. Abbey	Thos. H. Godwin	Same	Same	I	C	D L	C
3	1845	ALBANY	N.Y.	250,000	20	4	Jan. & July	65,000	3,200	580	3 00	H. Pumpelly	R. Merrifield	P. A. Sabbaton	Same	C & I	C	D L	L
4	1858	ALBION	N.Y.	30,000	100		Do.	3,000	136	—	3 80	Roswell Clark	Arad Thomas		V. V. Bullock	I	C	D L	L
5	1851	ALEXANDRIA	Va.	106,538	—	—	City works.	9,000	790	105	3 50	City Council	T. M. White	T. W. Smith	Same	I	C	D L	C
6	1852	ALLEGHANY	Pa.	200,000	25	4	May & Nov.	25,000	900	200	3 00	Jas. Marshall	J. C. Porter		Jas. Ray	I	C	D L	C
7	1853	ALLENTOWN	Pa.	60,000	100	3½	Do.	5,000	300	30	3 50	W. H. Blumer	J. M. Line	N. Landenschlager	Same	I	C	D L	L
8	1857	ALTON	Ill.	75,000	—	—	Private works.	4,000	250	67	3 50								
9	1858	ALTOONA	Pa.	40,000	25	—	Do.		Just	Finished	4 00	W. H. Wilson	B. F. Rose	Thos. S. Francis	Same	C	C	D L	L
10	1858	ANNAPOLIS	Md.	100,000	25		Jan. & July	4,000	120	64	4 00	Alex. Randall	Nich. H. Green	Geo. N. Taylor	Same	I	C	D L	L
11	1858	ANN ARBOR	Mich.	23,000	50	5	Mar. & Sept.	5,500	180	25	4 00								L
12	1858	ASTORIA	N.Y.	20,000			Do.	6,000	96	17	4 00	C. R. Trafford	S. A. Halsey		W. H. Taylor	I	C	D L	L
13	1855	ATLANTA	Geo.	50,000	25	5	Jan. & July	12,000	200	81	5 00	S. A. Dugas							
14	1855	ATTLEBORO'	Mass.	50,000	100	3	June & Dec.	6,000	151		4 00	H. M. Richards	Henry Rice	Same	Same	I	C	D L	C
15	1850	AUBURN	N.Y.	80,000	50	5	Jan. & July	12,000	400	120	7 00	Paul D. Cornell	Geo. R. Chase	——	G. R. Chase	I	R	—	C & L
16	1851	AUGUSTA	Geo.	80,000	25	8	Do.	9,000	230	200	6 00	L. A. Dugas	Geo. S. Harkey	Same	Same	I	Wood	L	L
17	1858	AUGUSTA & HALLOWELL	Me.	84,706	50	5	Do.	10,000	250	21	4 00	Rich. D. Rice	Jas. W. North	——	David C. Lewis	C & I	C	D L	C
18	1817	BALTIMORE	Md.	550,000	100	5	June & Dec.	100,000	8,300	1,820	2 50	C. O'Donnell	Joseph Brown	J. M. Saunders	R. A. Holmes	I	C	D L	L
19	1852	BANGOR	Me.	120,000	100	4	Jan. & July	12,000	760	22	3 50	Geo. K. Jewitt	Sol. Parsons	W. H Perry	Same	I	C	D L	C
20	1855	BATAVIA	N.Y.	32,000	20	4	Do.	2,500	150	25	4 00	Fox Holden		W. Tompkins	Same	I	C	D L	L
21	1853	BATH	Me.	65,000	100	3	April & Oct.	10,000	270	22	3 75	J. H. McLellan	Chas. Clapp	John Weeks	Same	I	C	D L	L
22		BATH	N.Y.	25,000			Do.												
23	1858	BELFAST	Me.	14,000	100		Jan. & July	7,000	145	—	7 00	H. O. Alden	W. H. Conner	T. H. Shaw	W. H. Burrill	I	R	—	L
24	1856	BELLEFONT	Pa.	20,000	25	2	Do.	3,500	105	18	4 00								
25	1854	BETHLEHEM	Pa.	23,000	50	4	June & Dec.	2,000	220	29	3 60					I	C	D L	L
26	1859	BEVERLY	Mass.	40,000	100			4,000	150	4	4 00	John J. Baker	J. B. Hill	W. H. Chaplin	Chas. Smead	I	C	D L	L
27	1853	BINGHAMPTON	N.Y.	50,000	50		May & Nov.	10,000	321	61	4 00	S. D. Phelps	Thos. D. Wright	Edmund Dillon	N. A. Phelps	I	C	D L	L
28		BIRMINGHAM	Pa.	40,000	50		Do.												
29	1858	BORDENTOWN	N.J.	50,000	25	3	June & Dec.	4,000	114	16	3 80	John S. Curtis	J. H. Wheeler	E. A. Hudson	Same	I	C	D L	L
30	1822	BOSTON	Mass.	1,000,000	500	5	Do.	130,000	12,000	2,265	2 50	Sam. A. Eliott	Chas. C. Smith	W. W. Greenough	Same	I	C	D L	L
31	1851	BRIDGEPORT	Ct.	75,000	25	4	Jan. & July	10,000	500	60	4 00	Hanford Lyon	John Cornwall	John Tarbox	Same	C & I	C	D L	L
32	1857	BRIDGETON	N.J.	50,000	20		Do.	5,000	178	16	4 00	U. D. Woodruff	Chas. E. Elmer	——	U. D. Woodruff	I	C	D L	L
33	1856	BRISTOL	Pa.	20,000	25		Do.	2,000											
34	1855	BRISTOL	R.I.	35,000	50	2	Do.	6,000	120	24	4 00	J. Babbett	W. J. Miller	Same	Same	I	C	D L	C
35		BROCKPORT	N.Y.	40,000	25		Do.												
36		BROOKLINE	Mass.	40,000	100	3	Do.	3,500	200	34	3 50	W. Bramhall	G. F. Horner	F. C. Sherman	Same	I	C	D L	C
37	1825	BROOKLYN	N.Y.	2,000,000	25	5	Jan. & July	150,000	10,000	2,600	3 00	Robt. Nichols	F. Howe	J. K. Brick	Same	C & I	C	D L	L
38	1848	BUFFALO	N.Y.	600,000	50	5	Do.	70,000	3,300	2,000	3 00		O. G. Steele	Same					
39		BURLINGTON	N.J.	25,000	25		Do.	5,000			4 00								
40	1853	BURLINGTON	Vt.	75,000	25		Do.	10,000	220		4 50								
41	1852	CAMBRIDGE	Mass.	300,000	100	5	Feb. & Aug.	20,000	1,425	275	3 50	John H. Blake	Estes Howe	William Gibson	Same	I	C	W L	C
42	1852	CAMDEN	N.J.	300,000	100	3	April & Oct.	10,000	700	140	3 50	Abr. Browning	W. M. Collins	O. W. Goodwin	Same	I	C	D L	L
43	1853	CANANDAIGUA	N.Y.	50,000	50		Jan. & July	3,000	200	25	4 00	E. G. Lapham	E. S. Gregory	——	StephenParrish	I	C	D L	L
44	1856	CANTON	O.	20,000	50		Mar. & Sept.	6,000	120	36	3 00	R C Richardson	D. G. Begges	John S. Short	Same	C & I	C	D L	L
45	1853	CAPE ISLAND	N.J.	80,000	100	3	October	10,000	80	20	6 00	P. P. Deiby							
46	1855	CARLISLE	Pa.	30,000	25		Jan. & July	4,000											
47	1856	CATASAUQUA	Pa.	15,000	25	5	May & Nov.	1,000	103	21	4 00	Joshua Hunt	Jno. Williams	Joshua Hunt	Same	I	C	D L	L
48	1858	CATSKILL	N.Y.	10,000	—	—	Private works.	3,000	134	20	4 00								
49	1857	CHAMBERSBURG	Pa.	30,000	25		Jan. & July	8,000											
50	1846	CHARLESTON	S.C.	723,800	25	4	Do.				4 00	J. Schnierle	J. R. Heriot						
51	1851	CHARLESTOWN	Mass.	150,000	50	4	Do.	25,000	1,150	210	3 50	P. Hubbell	G. B. Neal		R. Coyle	I	C	W L	C
52	1858	CHARLOTTE	N.C.	14,000	50	10	Mar. & Sept.	3,500	120	80	6 00	Jos. H. Carson	Levi S. Williams	Chas. Williams	L. S. Williams	I	R	W	L
53		CHARLOTTEVILLE	Vt.	15,000			Do.												
54	1851	CHELSEA	Mass.	100,000	100	3½	Jan. & July	8,000	535	126	3 50	Isaac Stebbins	W. R. Pearsman	John Andrew	Same	I	C	W L	C & L
55	1856	CHESTER	Pa.	75,000	25	3	April & Oct.	3,000	225	36	4 00	Fred. Fairlamb	John H. Baker	F. Fairlamb	Same	I	C	D L	L
56	1849	CHICAGO	Ill.	1,800,000	25	5	Jan. & July	150,000	4,265	1,100	2 50	Hugh T. Dickey	Jas. K. Burtis	——	Peter T. Burtis	C & I	C	D L	L
57	1851	CHILLICOTHE	O.	40,000	25	4	Do.	12,000	290	33	3 50		J. W. Graham						
58	1842	CINCINNATI	O.	1,000,000	100	5	Do.	225,000	6,000	1,700	2 50	J. H. Caldwell	W. L. Clarke	Jno. Jeffrey	——	I	C	D L	L
59	1859	CITIZENS', BROOKLYN	N.Y.	1,000,000	20		Do.	275,000	New	—	2 50	Wm. P. Libbey	Henry Warren	Tyler Sabbaton	Same	C	C	D L	L
60		CLARKSVILLE	Tenn.	100,000			Do.												
61	1836	CLEVELAND	O.	100,000	100	5	Do.	6,000	2,000	350	3 00	J. P. Handy	T. Dwight Eels	Thos. Hoadley	Same	C & I	C	D L	L
62		CLINTON	Mass.	20,000			Do.												
63		CLYDE	N.Y.	20,000			Do.												
64	1854	COHOES	N.Y.	50,000	20	3½	April & Oct.	5,000	400	40	3 60	T. G. Younglove	R. Merrifield	Same	Same	I	C	D L	L
65	1852	COLUMBIA	Pa.	37,500	25	—	Jan. & July	4,000	250	22	3 50	J. G. Hess	Alex. Caldwell	S. A. D. Nager	Same	I	C	D L	L
66	1852	COLUMBIA	S.C.	44,000	25	4	Do.	6,000	400	55	6 00	G. E. Walker					R		
67	1858	COLUMBUS	Ga.	75,300	25	5	Do.	5,000	254	79	7 00	H. T. Haw	C. E. Dexter	J. McIlhenny	Same	I	R	—	L
68	1850	COLUMBUS	O.	100,000	10	—	Do.	30,000	800	174	3 00	W. A. Platt	N. Z. Mills	G. Douty	Same	C & I	C	D L	C & L
69	1853	CONCORD	N.H.	50,000	50	4	Do.	12,000	400	38	3 50	Nath. White	S. Dana	——	John M. Hill	I	L	D L	C
70	1853	COVINGTON & NEWPORT	Ky.	100,000	50	3½	Do.	28,000	544	148	4 00	Jno. Jeffrey	C. T. Martin	J. Jeffrey	——	I	C	D L	L
71	1854	CUMBERLAND	Md.	60,000	50	3	Do.	6,000	280	36	4 00		——	——					
72	1857	DANBURY	Ct.	50,000	25	4	Do.	2,000	120		4 00	H. Benedict	Henry Williams	——	Henry Benedict	I	C	D L	Filings
73	1856	DANVILLE	Pa.	3,000			Do.												
74	1855	DAVENPORT	Iowa.	56,000	100	—	Do.	6,000	250	256		G. L. Davenport	J. Dermody	——	F. Dermody	I	C	D L	L
75	1848	DAYTON	O.	50,000	25	5	Aug.	10,000	620	165	4 00	W. Dickey	S. T. Evans	Joseph Light	Same	C & I	C	D L	L
76	1853	DEDHAM	Mass.	40,000	50		Jan. & July	6 000	112		4 00								
77	1849	DETROIT	Mich.	500,000	50	5	Do.	80,000	1,000	491	3 50	Alex. H. Dey	P. E. Demill	Same	Same		C	D L	L
78	1854	DORCHESTER	Mass.	150,000	100		Do.	12,000	210	50	4 00	John J. May	J. H. Coster	Same	Same	I	C	D L	C
79	1859	DOVER	Del.	12,000	—	—	Private works	2,000	40	12	4 00	Private	Works.	Chas. N. Trump	Same	I	C & R	D L	L
80		DOYLESTOWN	Pa.	50,000			Do.												
81		DUBUQUE	Iowa.	100,000	50	—	Do.	17,000	500	126	4 50	C. H. Booth	J. C. Higginson	Saml. Ross	Same	I	C	D L	L
82	1853	EAST BOSTON	Mass.	133,000	25	4	Do.	20,000	520	280	3 50	H. Barnee	G. H. Plummer	J. B. Warner	Same	I	C	D L	C & L
83	1853	EAST GREENWICH	R.I.	11,200	100	15	Do.	3,000	100		7 00								
84	1850	EASTON	Pa.	125,000	50	4	June & Dec.	6,000	657	76	3 60	M. H. Jones	H. D. Maxwell	C. E. Weggandt	Same	I	C	D L	L
85	1856	EASTPORT	Me.	50,000	55		Do.	3,000	140	15	4 00	O. S. Livermore	P. Houghton	——	J. G. Newcomb	I	C	D L	C
86	1855	ELIZABETH	N.J.	100,000	20	3½	Jan. & July	8,000	280	44	3 80	Keen Pruden	Geo. W. Harris	Same	Same	I	C	D L	L
87	1852	ELMIRA	N.Y.	50,000	25	3½	Do.	5,000	210		4 00	Jas L. Woods	S. T. Hunt	Same	Sam	C & I	C	D L	L
88	1852	ERIE	Pa.	68,000	50	3½	June & Dec.	10,000	300	80	3 00								L
89	1843	EVANSVILLE	Ind.	60,000	50	4	Jan. & July		306	90		C. G. Keats	J. J. Chandler	C. G. Keats	Same		C	D L	L
90	1847	FALL RIVER	Mass.	26,000	—	—	Private works.	12,000	400	60	3 50								
91	1859	FAYETTEVILLE	N.C.	25,000	100	6	Jan. & July	7,000			6 00								
92	1857	FISHKILL	N.Y.	10,000	20		Do.	1,500	50	4	6 00	R. B. Cary	Aug. Hughson	W. Crawford	JEVSteenbergh	I	R	W	L
93	1853	FITCHBURG	Mass.	100,000	50	3	Do.	7,000	190	34	4 00	Ives Phillips	C. W. Wilder	H. F. Coggeshall	Same	I	C	D L	C
94		FLEMINGTON	N.J.	20,000			Do.												
95	1855	FLUSHING	N.Y.	41,000	50	1½	Mar. & Sept.	6,500	134	18	4 00								
96		FORT WAYNE	Ind.																
97	1851	FRANKFORT	Ky.	30,000	—	—	City Works	5,500	140	79	4 50								L
98	1851	FREDERICK CITY	Md.	36,000	100	—	Jan. & July	5,000	250	32	6 70	Chas. E. Trail	Same	——	——	I	R	W	L
99	1854	FREDERICKSBURG	Va.	72,500	50	5	Do.	4,500	230	—	4 00	Alex. K. Phillips	Jos. D. Hunt	——	Thos. Griffin	I	C	D L	L
100	1858	FREDONIA	N.Y.	10,000	100	—	Do.	2,000	43	8	4 00	Elias Forbes	Preston Barmore	Same	Same	Natural gas.		—	L
101	1858	FULTON	N.Y.	12,000	100		Do.	4,000	135	7	7 00	A. Knibloe	D. W. Gardiner	N. B. Rice	Same	I	R	W	L
102	1855	GALENA	Ill.	70,000	100		Do.	8,000	236	50	4 00	Jno. Lorrain	Same	D. Hawkins	J Appleby	I	C	W L	L
103	1858	GALVESTON	Texas.	120,000	50		Do.	7,000	150		6 00	A. F. James	Julius Frederick	N. S. Hill	Same	I	C	D L	L
104	1858	GENEVA	N.Y.	75,000	25	3½	Do.	6,000	250	34	4 00	L. W. Lacey	W. F. Curry	Same	Same	I	C	D L	L
105		GERMANTOWN	Pa.																
106	1854	GLENN'S FALLS	N.Y.	35,000	50	3	Feb. & Aug.	4,000	161	18	4 00								
107	1854	GLOUCESTER	Mass.	40,000	50	—	Jan. & July	5,000	260	1	3 50	F. G. Low	E. H. Davis	——	C. W. Cochran	I	C	D L	C
108		GLOVERSVILLE	N.Y.	30,000			Do.												
109	1855	GREAT BARRINGTON	Mass.	5,000	100		Apr. & Oct.	4,000	58	4	7 00						R		
110	1849	GREAT FALLS	N.H.	50,000	100	3	Do.	3,000	230	40	4 00	M. C. Burleigh	G. W. Burleigh	——	J. A. Burleigh	I	C	D L	L
111	1859	GREENSBORO'	N.C.	12,000	50		Do.				7 00	Peter Adams	A. P. Eckel		C. F. Holtzn	I	R		L
112	1859	GREENSBURG	Pa.	30,000	25		Do.	3,000											
113	1854	HAGERSTOWN	Md.	25,000	10		Jan. & July	2,000	125		4 50	W. Motter	T. G. Robertson	——	T. G. Robertson	I	C	D L	L
114	1859	HANNIBAL	Mo.	100,000	100	—	Do.	6,000	100	40	3 50	Thos. A. Harris	A. W. Billings	——	J. G. Hock	I	C	D L	L
115	1857	HARLEM (N.Y. City)	N.Y.	350,000	50	3½	Do.	25,000	700	1,800	3 50	Burr Wakeman	H. P. McGown	Sam. R. Brick	Jacob M. Long	I	C	D L	L
116	1855	HARRISBURG	Pa.	100,000			Do.	5,000											
117	1849	HARTFORD	Ct.	175,000	25	4	Do.	25,000	1,700	280	3 00	S. S. Ward	Thos. R. Dutton	——	T. R. Dutton	I	C	D L	L
118	1859	HAVERSTRAW	N.Y.	15,000	50		Do.	5,000	100		4 00								L
119	1856	HOLLIDAYSBURG	Pa.	30,000	25	3	Do.	4,000	200	10	3 50	J. A. Landis	S. Calvin	J. A. Landis	Same	I	C	D L	L
120	1854	HONESDALE	Pa.	30,000	25	3	Do.	8,500	180	35	4 00	R. F. Lord	F. B. Penniman	——	J. K. Sutton	I	L	D L	L
121	1853	HUDSON	N.Y.	50,000	100	3½	Feb. & Aug.		270	64	4 00	Oliver Bronson	J. W. Fairfield	C. Roome	Same	C	C	D L	L
122	1857	HUNTINGDON	Pa.	18,000	50	3	Do.	2,000	107	9	3 50	W. Dorris, jr.	J. Simpson Africa	——	U. B. Lewis	I	C	D L	L
123	1856	HUNTSVILLE	Ala.	7,825	25	—	June & Dec.	2,000	75	14	5 00	Jno. S. Dickson	Wm. Echols	Jacob W. Smith	Same	I	R	W	L
124		INDIANOPOLIS	Ind.	150,000			Do.												
125	1857	IOWA CITY	Iowa.	40,000	50		Feb. & Aug.	4,000		47	4 50								L
126	1853	ITHACA	N.Y.	75,000	25	3½	Jan. & July	6,000	212	26	4 00	D. Boardman	R. Cartwright	Same	Same	I	C	D L	L
127	1857	JACKSON	Mich.	25,000	50		Do.	6,000	125	20	3 50	P. B. Loomis	E. Pringle	E. A. Coen	——	C & I	C	D L	L
128	1858	JACKSONVILLE	Ill.	25,000	50		Do.	7,000	150	25									
129	1856	JAMAICA	N.Y.	20,000	25	4	Do.	6,000	130	20	4 00	L. Herriman	J. G. Lamberson	R. Brush	Same	I	C	D L	L
130		JAMAICA PLAINS	Mass.	50 000			Do.												
131	1856	JANESVILLE	Wis.	50,000	100		Do.	12,000	200	40	4 00	In litigation.	——	——	——	I	C	D L	L

JOHN B. MURRAY'S

TABLES of AMERICAN GAS-LIGHT COMPANIES, Corrected December 31, 1859.

No.	Chartered.	Town.	State.	Chart'd Capital.	Per Sh.	Sem An'l Div.	Dividends payable.	Population of Gas District.	Private Meters.	Public Lamps.	Price 1,000 feet.	President.	Secretary.	Engineer.	Superintd't.	Clay or Iron Ret'ts.	Rosin or Coal.	Wet or Dry Lime.	Cement or Lead Joints.
				$															
132	1853	Jersey Cy. & Hoboken	N.J.	300,000	20	5	Jan. & July	30,000	1,900	212	3 00								
133		Jersey Shore .....*	Pa.	15,000			Do.												
134	1856	Johnstown.....	Pa.	80,000	25	3	Do.	8,000	300	—	3 00	John Lowman	F. W. Hay	——	——	I	C	D L	L
135	1857	Joliet.....	Ill.	300,000	100		June & Dec.	6,000	160	30	4 00	E. Wilcox	N. D. Elwood	P. P. Deily	E. Wilcox	I	C	D L	L
136	1853	Kalamazoo..	Mich.	30,000	100		Do.	10,000	200	25	4 00								L
137	1843	Kensington.....*	Pa.	100,000	10	5	Feb. & Aug.	60,000	2,800	400	2 50	John Landell	Peter Rambo			I	C	D L	L
138	1855	Keokuk.....	Iowa.	100,000	100		Jan. & July	10,000	360	120	3 50	Ed Kilbourn	E. K. Buell	——	——	C & I	C	D L	L
139	1855	Kingston.....	Pa.	50,000	50		Do.	3,000	240	30	4 00								
140	1854	Knoxville.....	Tenn.	63,000	50		April & Oct.	4,000	128	40	5 00								
141	1859	La Crosse	Wis.	100,000	50		June & Dec.	10,000	100		5 00	Wm Brewster	Edwin Flint	J. R. Conard	Same	I	C	D L	L
142	1854	Lafayette.....	Ind.	60,000	50	6	Jan. & July	8,000	280	60	3 25	M. L. Pierce	David M. Bride	——	Charles Collier	I	C	D L	L
143	1856	Lambertville.....	N.J.	30,000	20		Do.	2,500	90	18	4 00	J. Barber	C. A. Skillman	C. H. Barber	Same	I	C	D L	L
144	1849	Lancaster.....	Pa.	100,000	25	4	Do.	10,000	620	100	3 00	C. Hager	Jas. L. Reynolds	Geo. K. Reed	Hugh Corcoran		C	D L	L
145	1856	Lancaster.....	O.	25,000	50		Do.	5,000	140	28	3 50								
146	1855	Lansingburg.....	N.Y.	25,000	—	—	Private works.	7,000	130		4 00	Private works		——	L. C. Hanford	I	C	D L	L
147	1849	Lawrence	Mass.	200,000	100	4	Feb. & Aug.	15.000	779	65	3 50	John H. Blake	A. C. Tenney	Geo. D. Cabot	R. R. Harriman	I	C	W L	L & C
148	1859	Leavenworth.....*	Kans.	200,000	100		Jan. & July	10,000	200	—	5 00	J. H. M'Dowell	Jas. Goodin	O. A. Leopold	Jas. R. Duncan	I	C	D L	L
149	1856	Lebanon.....	Pa.	26,000	25		Feb. & Aug.	5,000	225	35	4 00	A. Weidell							
150	1853	Lewisburg.....	Pa.	20,000	50		Jan. & July	4,000	100		4 00	Eli Sliper							
151	1856	Lewiston.....	Me.	100,000	100	3	Do.	6,000	500	104	4 00	A. H. Small	Marshall French	John Gill	Same	C & I	C	D L	C
152	1856	Lewistown	Pa.	30,000	20	3	April & Oct.	3,000	160	18	3 10	E. L. Benedict	Jno. W. Shaw	Joseph Gray	Same	I	C	D L	L
153	1853	Lexington.....	Ky.	100,000	50	4	Jan. & July	5 000	306	104	4 00	Alex. Jeffrey	Thos. Lewinski	A. Jeffrey	Same	—	C	D L	L
154	1853	Little Falls.....	N.Y.	12,000	25		Do.	3 500	115		7 00	A. G. Story	Same	G. B. Waterhouse	Same	I	R	W	L
155	1858	Lockhaven.....	Pa.	28,000	25		Do.	3,000	140	24	4 00	G. W. Mears							
156	1838	Louisville..	Ky.	600,000	50	6	Do.	80,000	2,866	951	2 70	R.G.Ccurtenay	J. S. Cain	Thos. Rankin	Same	I	C	D L	L
157	1849	Lowell.....	Mass.	200,000	100	5	Do.	50,000	2,290	220	3 25								C
158	1852	Lynchburg.....	Va.	70,000	25	5	Do.	6,000	330	50	3 80	J. R. M'cDaniel	D. E. Spencer.	——	Jas. Cleland	I	C	D L	C
159	1852	Lynn.....	Mass.	55,000	100	4	Do.	20,000	400		4 00								
160	1859	Lyons .....*	N.Y.	20,000	50		Do.	8,000											
161	1852	Macon.....	Geo.	75,000	25	6	Do.	5,000	254	105	5 00	J.M.Boardman	A. R. Freeman	G. A. McIlhenny	Same	I	Wood	D L	C & L
162	1851	Madison.....	Ind.	160,000	25	3	Do.	10,000	308	95	3 50	A. Todd	Jas. Siddell	——	A. Todd	I	C	D L	L
163	1855	Madison.....	Wis.	100,000	25		Do.	5,000	220	70	6 00								
164	1854	Malden & Melrose..	Mass.	50,600	100	3	Feb. & Aug.	5,000	180	25	4 00	J. A. Ellis	G. F. Taylor	——	E. Thompson	C & I	C	D L	L
165	1852	Manayunk.....*	Pa.	40,000	25		Do.	7,000											
166	1859	Manchester	N.H.	125,000	100	5	Jan. & July	25,000	800	125	3 00	E. A. Straw	H. Foster	J. T. P. Hunt	Same	I	C	D L	C & L
167	1830	Manhattan(N.Y.Cy.)	N.Y.	4,000,000	50	5	Do.	600,000	26,000	9,000	2 50	Chas. Roome	Sam. H. Howard	Jos. A. Sabbaton	†See end Table	C	C	D L	L
168		Mansfield.....*	O.	25 000	30		Do.												
16		Marblehead. .....*	Mass.	50,000			Do.												
170		Mauch Chunk.....*	Pa.	50,000	25		Do.												
171	1857	Marietta..... ...	O.	50,000	50		Do.	6,000	130	17	4 00	A. T. Nye	A. T. Nye, Sr.	——	D. Belden	I	C	D L	L
172	1857	Massilon	O.	20,000	25		Do.	5,000	120		3 00								
173	1855	Meadville.....	Pa.	39,000	25		Do.	3,000	170	6	3 50	D. Derrickson	P. D. Tucker	——	H. J. Budd	I	C	D L	L
174		Medina.....	N.Y.	2,000	20		Do.	2,000	30		7 00	Wm. Bent	——	——	——	I	R	—	L
175	1852	Memphis.....	Tenn.	300,000	100	5	June & Dec.	12,000	700	151	4 00	Jno. Millington	John Shelby	J. Simister	Same	I	C	D L	L
176	1853	Middletown.....	Ct.	50,000	25	3	Mar. & Sept.	5,000	250	30	4 00	B. Douglas	W. Woodward	Isaac Battin	Same	I	C	D L	L
177		Milford.....*	Mass.	20,000			Do.												
178	1852	Milwaukie	Wis.	400,000	50	5	Jan. & July	24,000	1,300	284	3 50	E. Cramer	E. Irons	——	W. Hayden	I	C	D L	L
179	1836	Mobile	Ala.	200,000	50		Do.	30,000	850	200	4 50								
180		Monroe.... .....*	Mich.	50,000			Do.												
181	1852	Montgomery.....	Ala.	100,000	100	4	Feb. & Aug.	7,000	300	77	6 00	Smith Cullom	John W. Durr	Stephen Bates			R	—	L
182	1859	Morrisania.....*	N.Y.	30,000	25		Feb. & Aug.												
183	1859	Morristown	N.J.	18,000	50		Jan. & July	3,500	90	—	4 00	W. C. Baker	A. W. Cutter	Jas. Clements	A. W. Cutter	I	C	D L	L
184	1854	Mount Holly.....	N.J.	16,650	50	3	April & Oct.	2,000	140		7 00	A. R. Shreve	C. H. Hollinshead	Same	Same	I	R	—	L
185		Mount Vernon .....*	O.	50,000	25		Do.												
186	1857	Muscatine	Iowa.	50,000	100	—	Jan. & July	3,000	150	60	4 50	Chester Weed	E. Klein	——	E. Hobert	I	C	D L	L
187	1854	Nantucket	Mass.	50,000	100	3	Feb. & Aug.	6,000	275	65	4 00	Geo. W. Macy	And. J. Morton	——	G. Munroe, Jr.	I	C	D L	L
188		Nashua	N.H.	45,000	60		Jan. & July.	10,000	250	46	3 50								
189	1850	Nashville.....	Tenn.	200,000	50	5	Do.	20,000	730	200	4 00	W. Barrow	Jas. H. Kendrick	Same	Wm. King	I	C	D L	L
190	1858	Natchez.....	Miss.	46,000	100		Do.	8,000	200	90	5 00	G. W. Koontz							
191	1852	New Albany.....	Ind.	200,000	50	3½	Do.	16,000	250	73	3 50	J. M. Hains	Walter Mann	J. M. Hains	Same	I	C	D L	C
192	1846	Newark.....	N.J.	300,000	50	4½	Do.	45,000	2,400	453	3 50	W. S. Faitoute	Jno. I. Young	Jos. Battin	H. P. Baldwin	I	C	D L	L
193	1856	Newark.....	O.	30,000	100		Do.	7,000	152	30	3 50	H. Smith	J. Buckingham	F. B. Taylor	Same	I	C	D L	L
194	1852	New Bedford.....	Mass.	130,000	100	5	Do.	15,000	1,125	304	3 25	W. C. Taber	W. T. Howland	——	J. T. Duff	I	C	W L	L
195		New Britain.....	Ct.	30,000	25	5	Do.	3,600	200	20	3 50	J. L. Strickland	Wm. E. Hunt	Same	Same	C	C	D L	C
196	1851	New Brunswick.....	N.J.	100,000	20	4	Do.	8,000	460	76	3 80	David Bishop	John G. Hall	Same	Same	I	C	D L	L
197	1852	Newburg	N.Y.	67,000	20	3½	Do.	15,000	600	55	4 00								
198	1852	Newburyport.....	Mass.	150,000	100		Do.	9,000	315	15	3 75	R. Fowler	E. F. Stone		F. Curtis	I	C	D L	L
199	1857	Newcastle	Del.	22,300	10	3	Do.	4,000	112	19	4 00								
200	1847	New Haven.....	Ct.	200,000	25	4	Do.	30 000	2,004	241	4 00	W W Boardman	John S. Graves	Same	Thos. M. Cox	I	C	D L	L
201	1853	New London.....	Ct.	70,000	50	3	Do.	12,000	300	—	4 00	A. C. Lippitt	J. N. Harris	Alex. Merrell	Same	I	C	D L	L
202	1835	New Orleans.....	La.	1,500,000	100	6	Do.	120,000	5,000	2,000	4 50								
203	1853	Newport	R.I.	130,200	100	4	Do.	10,000	500	110	3 50	Henry Bull	Jno. H. Cozzens	J. N. Stanley	Same	C & I	C	D L	C
204	1854	Newton&Watertown	Mass.	300,000	100	2	Do.	10,000	270	52	3 80	J. N. Bacon	B. F. Bacon	H. K. Symmes	Same	I	C	D L	C
205		Newton.....*	Pa.	20,000							4 00								
206	1828	New York.....	N.Y.	1,000,000	50	5	May & Nov.	100,000	18,000	3,150	2 50	W. W. Fox	C. L. Everitt	——	John Mowton	C	C	D L	L
207	1859	Niagara Falls....*	N.Y.	100,000	25		Do.												
208		Norfolk..... ..*	Va.	60,000															
209	1853	Norristown.....	Pa.	41,700	25	3	June & Dec.		350	50	3 75								
210		Northern Liberties.	Pa.	400,000	25	7½	Mar. & Sept.				2 50								
211	1856	Northampton.....	Mass.	35,000	25	—	Do.	4,500	140	30	4 00	D. W. Crafts	——	D. W. Crafts	J. A. Shepard	I	C	D L	L
212		Northbridgewater.*	Mass.	50,000			Do.												
213	1856	Norwalk.....	Ct.	30,000	25	4	Feb. & Aug.	6,000	205	8	4 00	C. B. White	W. C. Street	——	M M. Norton	I	C	D L	Rust
214	1859	Norwalk.....	O.	30,000	50		Jan. & July	4,000	100	28	4 00	C. L. Bolt	G. H. Safford	E. A. Coen	H. Harlin	C	C	D L	L
215	1854	Norwich.....	Ct.	75,000	25	3½	Do.	12 000	500	100	3 50	John Dunham	Jno. L. Devotion	B. M. Douglas	Same	I	C	D L	C
216	1859	Nyack.....	N.Y.	20,000	50		Do.	2,500											
217	1853	Ogdensburg.....	N.Y.	75,000	50	—	Do.	9,000	266	52	4 00	Jas. Y. Hopkins	C. A. Burnham	——	R. E. Gordon	I	C	D L	L
218		Orange .....*	N.J.	65,000			Do.												
219	1852	Oswego....	N.Y.	81,250	25	3½	Do.	15,000	550	100	4 00	Luther Wright	S B. Ludlow	W. Cartwright	Same	C & I	C	D L	L
220	1855	Ottawa	Ill.	45,000	100	6½	Do.	6,000	225	75	4 00	W.H. Cushman	Levi Mason	Same	Wm. Cogswell	C & I	C	D L	L
221	1856	Owego.....	N.Y.	40,000	50	3½	Do.	5,000	200	36	4 00	W. F. Warner	A. P. Storrs	——	——	C & I	C	D L	L
222	1845	Painsville	O.	200,000	100	5	May & Nov.												L
223	1856	Palmyra	N.Y.	12,000	50		Jan. & July.	3,000	120	14	3 50	G. W. Cuyler	F. Williams	S. Jackson	Same	I	R	D L	L
224	1847	Paterson.....	N.J.	110,000	5	3	Do.	18,000	600	96	3 80	C. I. Westervelt	E. A. Keene	——	E. A. Keene	C & I	C	D L	L
225	1850	Pawtucket.	R.I.	100,000	50	4	Do.	8,000	485	75	3 50	James Dennis	Isaac Shove	——	Henry Crowell	I	C	D L	C
226	1855	Peekskill	N.Y.	31,000	50	3	June & Dec.	4,000	190	37	4 00								
227	1859	People's, Chicago ...	Ill.	500,000	50	New	Do.	100,000	—	—	2 50	Robt. H. Foss	H.W.Zimmerman	S. R. Dickson	Same	C	C	D L	L
228	1855	Peoria	Ill.	100,000	50	4	Do.	8,000	350	140	3 50	J. L. Griswold	Matt. Griswold	M. Laughlin	Same	I	C	D L	L
229	1852	Petersburg.....	Va.	120,000	25	5	Jan. & July	20,000	600	204	3 80	J. N. Nichols	Same	W. H. Baxter	Same	I	C	D L	C & L
230	1841	Philadelphia.....	Pa.	3,000,000	—	—	City Works.	650,000	32,000	5,000	2 25	City Council		J. C. Cresson		C & I	C	D L	L
231	1855	Piqua	O.	50,000	50		Jan. & July	6,500	200	53	4 00	A. G. Conover	Wm. Y. Strong	O. Clapsaddle	——	I	C	D L	L
232	1835	Pittsburg	Pa.	300,000	50	5	Do.	60,000	2,624	517	1 50	Thos. Bakewell	George Black	James Thomson	Same	I	C	D L	C
233	1854	Pittsfield.....	Mass.	40,000	100		Do.	3,000	250	5	4 00	R. W. Adam	W. R. Plunkett	——	J. H. Faulkner	1	C	D L	C
234		Plattsburg.... ...*	N.Y.	30,000			Do.												
235	1853	Plymouth.....	Mass.	40,000	100		April & Oct.	8,000	181	6	4 00	W. T. Davis	W. S. Danforth	——	——	I	C	D L	C
236	1349	Portland.....	Me.	250,000	50	4	Jan. & July	30,000	1,900	247	3 50	Neal Dow	C. S. D. Griffin	Thos. Barker	Neal Dow	C & I	C	D L	C & L
237	1859	Portland.....*	Oreg.	50,000	50		Do.												
238		Port Lavacca.....*	Texas.	50,000			Do.												
239	1851	Portsmouth.....	N.H.	60,000	100	3	April & Oct.	12,000	425	81	4 00								
240	1855	Portsmouth.....	O.	50,000	50	4	Jan. & July	10,000	400	63	3 50	J V Robinson jr.	J. W. Collins	——	T. H. Jones	I	C	D L	C
241	1855	Portsmouth.....	Va.	100,000	50	4	Do.	4,000	140	65	4 00	Chas A. Grice	Same	J. P. Kennedy	C. C. Grice	I	C	D L	L
242	1856	Pottstown.....*	Pa.	20,000	25		Do.	8,500											
243	1850	Pottsville.....	Pa.	110,000	50	2	Do.	10,000	525	62	3 30	S. Silliman	D. E. Rice	M. Boone	Same	I	C	D L	L
244	1850	Poughkeepsie.....	N.Y.	70,000	25	4	Mar. & Sept.	15,000	625	64	4 00								
245	1848	Providence.....	R.I.	1,000,000	50	4	Jan. & July	60,000	4,200	864	3 00	Amos D. Smith	Edw. Walcott	Same	B. O'Neill	I	C	D L	C & L
246	1853	Quincy.....	Ill.	300,000	50	4	June & Dec.	12,000	421	220	3 50	S. W. Rogers	Same	C. C. Hopper	Same	I	C	D L	L
247	1855	Racine	Wis.	40,350	25		Do.	7,000	200	33	3 50								
248	1857	Rahway.....	N.J.	50,000	20		Jan. & July	5,000	165		4 00	J. R. Shotwell	E. Y. Rogers	P. Clark	Same	C & I	C	D L	L
249	1858	Raleigh.....	N.C.	25,000	100	6	May & Nov.	5,000	120	34	6 00	D. G. Fowle	W. E. Anderson	J. Waterhouse	D. G. Simpson	I	R	—	L
250	1848	Reading.....*	Pa.	80,000	25	3	Jan. & July	20,000	700	40	3 00								
251		Richmond.....	Va.	341,975	—	—	City Works.	80,000	2,200	755	3 80	N. B. Hill			T. H. Winne	I	C	W L	L
252	1852	Rochester.....	N.Y.	200,000	50	5	Jan. & July	50,000	2,100	450	3 00	Lewis Brooks	Levi A. Ward	Geo. W. Parsons	Same	C & I	C	D L	L
253	1854	Rock Island.....	Ill.	100,000	50		Do.	6,000	200	50	4 50	N. B. Buford	Ben. Harpin	Same	Same	C & I	C	D L	L
254	1854	Rockland	Me.	50,000	100		Do.	6,000	170	150	4 40								
255	1852	Rome.....	N.Y.	35,000	100	3½	Do.	10,000		20	4 00								
256	1854	Rondout & Kingston	N.Y.	65,000	20	3½	June & Dec.	10,000	375	36	3 80	J. W. Baldwin	J. P. O erhoudt	W. W. Hague	J. W. Beatty	C & I	C	D L	L
257	1854	Roxbury.....	Mass.	150,000	100	5	Jan. & July	20,000	1,100	360	3 50								
258		Rutland.....*	Vt.	100,000			Do.												
259		Saco..... ...	Me.	71,600	100	3½	April & Oct.		220	18	4 00								C
260		Sacramento.....	Cal.	500,000	100		Do.												
261	1859	Sag Harbor.....*	N.Y.	20,000			Do.				4 00	Private	Works.	D. Congden	Same				

JOHN B. MURRAY'S

TABLES of AMERICAN GAS-LIGHT COMPANIES, Corrected December 31, 1859.

No.	Chartered.	Town.	State.	Capital.	Per Sh.	Sem An'l Div.	Dividends payable.	Population of Gas District.	Private Meters.	Public Lamps.	Price 1,000 feet.	President.	Secretary.	Engineer.	Superintd't.	Clay or Iron Ret'ts.	Rosin or Coal.	Wet or Dry Lime.	Cement or Lead Joints.
					$														
262	1853	Saint Albans	Vt.	30,000	50	—	April & Oct.	3,000	100	—	7 00	——	——	B. M. Dart	Same	I	R	W	C & L
263	1857	Saint Joseph	Mo.	50,000	100	5	Jan. & July	6,000	250	20	5 00	M.J.Thompson	J. M. Wilson				C	D L	L
264	1989	Saint Louis	Mo.	600,000	50		June & Dec.	180,000	5,000	1,550	3 50	L.A.LaBeaume	Edw. Stagg	Thomas Pratt	C. E. Dunn	C & I	C	D L	L
265	1857	Saint Paul	Min.	200,000	50	3	Jan. & July	10,000	211	154	6 00	Alex. Ramsey	Jno. A. Peckham	Wm. Kennedy	Same	I	C	D L	L
266	1856	Salem	N.J.	30,000	20	3	Do.	5,000	260	26	3 80								
267	1850	Salem & So. Danvers	Mass.	200,000	100	4	Feb. & Aug.	30,000	1,300	160	3 50	George Choate	R. Gardiner	Francis Brown	Same	I	C	D L	C
268	1859	Salem	O.	25,000	20		Do.	3,000	171	35	3 50	Thos. Sharp	Allan Boyle	Wm. Deane	Same	C & I	C	D L	C
269	1859	Salisbury	N.C.	14,000	50	6	May & Nov.	3,500	80	50	6 00	T. C. Smyth	J. E Ennica	W. Bowes	H. Bell	I	R	—	L
270		Salmon Falls	Me.	25,000															
271		San Antonio	Texas	75,000															
272	1854	Sandusky	O.	75,000	50		April & Oct.	9,000	300	70	3 00	S. B. Caldwell	Wm. Hudson	Same	Same	C & I	C	D L	C & L
273	1852	San Francisco	Cal.	1,000,000	100	6	Do.					J. O'Donohue	J. G. Eastland	——	W. W. Beggs	I	C	D L	L
274	1858	Saratoga Springs	N.Y.	39,000	100		Jan. & July	6,000	267	20	3 60	L. H. Tupper	R. D. Bardwell	C. E. Durkee	Same	I	C	D L	L
275	1849	Savannah	Ga.	200,000	25	5	Do.	10,000	1,100	480	4 75	F. T. Willis	Wm. F. Holland	Jas. R. Smedberg	Wm. Howe	C & I	C	D L	L
276	1851	Schenectady	N.Y.	50,000	—	—	Private Works	11,000	400	160	4 00								
277	1858	Scranton	Pa.	100,000	25		Jan. & July	6,000	120		3 80	J. H. Scranton	Chas. Fuller	——	J. F. Hunt	I	C	D L	L
278	1857	Selma	Ala.	20,000	100		Do.	2,000	40	18	5 00								
279	1856	Seneca Falls	N.Y.	80,000	50	2	Do.	6,000	220	37	4 00								
280		Shreveport	La.	40,000	25		Do.												
281	1856	Sing Sing	N.Y.	40,000	100		Do.	3,000	141	37	4 00	Thos. Smull	C. F. Maurice	——	W. H. Barlow	C & I	C	D L	C
282	1859	Southbridge	Mass.	5,000	25		Do.	4,000	100		6 00								
283		South Boston	Mass.	200,000	50		Jan. & July		400	109	3 25								
284	1854	Springfield	Ill.	75,000	50		Do.	10,000	493	276	3 50	N. H. Ridgeley	Chas. Ridgely	——	Wm. Gwynne	I	C	D L	L
286	1848	Springfield	Mass.	100,000	500	5	Feb. & Aug.	10,000	700	90	4 00	J. D. Brewer	Theo. Stebbins	Geo. Dwight	Same	I	C	D L	C
287	1855	Stamford	Ct.	21,000	25	5	April & Oct.	3,000	150	50	4 00	H.K. Skelding	J. W. Leeds		E. Gay	I	C	D L	C
288	1857	States Island	N.Y.	150,000	50	5	Jan. & July	26,000	260		4 00								
289	1859	Staunton	Va.	18,000	50	6	Do.	4,000	81	18	7 00	J A. Waddell	Geo. E. Price	M. Bowes	R. V. Horton	I	C	Tar	L
290	1848	Syracuse	N.Y.	125,000	25	5	Mar. & Sept.	25,000	1,200	272	3 00	M. D. Burnet	Allen Munroe		L. W. Conkey	C & I	C	D L	
291		Tamaqua	Pa.	40,000	25		Do.												
292	1859	Tarrytown & Irvt'n.	N.Y.	70,000	50		Jan. & July	5,000	200	100	4 00	N. B. Holmes	S. M. Raisbeck	Geo. M. Dimmock	Same	I	C	D L	C
293	1853	Taunton	Mass.	10,000	50	3	Do.	12,000	255	50	4 00	Albert Field	Edwin Keith	Same.	Same	I	C	D L	C
294		Terre Haute	Ind.	49,000			Jan. & July												
295		Thompsonville	Ct.	25,000															
296		Tiffin	O.	25,000			Do.												
297	1853	Toledo	O.	100,000	50	3	Do.	8,000	450	89	3 50	Geo. Spencer	John W. May	——	——	C & I	C	D L	C
298	1847	Trenton	N.J.	100,000	20	4	Do.	15,000	700	100	3 60	Imlah Moore	John S. Chambers	——	Saml. Mentz	I	C	D L	C & L
299	1848	Troy	N.Y.	200,000	100	4	June & Dec.	35,000	1,575	312	3 60	S. Southwick	S. S. Dauchy	Same	Same	I	C	D L	L
300	1849	Utica	N.Y.	80,000	100	4	April & Oct.	22,000	612	112	3 60	Thos.R.Walker	H. H. Fish	Same	Same	I	C	D L	L
301		Vicksburg	Miss.	66,000	50		Mar. & Sept.	4,000	220	115	4 50	B. S. Tapper	W. H. Shaw	D. Carrigue	Same	I	C	D L	C & L
302	1859	Vincennes	Pa.	25 000	100	—	Jan. & July	2,000	100	25	4 00	W. H. Terrell	R. T. Coverdale	Same	Same	I	C	D L	L
303		Walden	N.Y.	2,500			Private works	1,000	17	—	6 00	Scofield,	Capron,	and	Company.	I	C	D L	L
304	1856	Waltham	Mass.	2 ,000	50		Jan. & July												
305		Ware	Mass.	30 000			Do.												
306	1854	Warren	R.I.	20,000		—	Do.	3,000	115	23	4 00								
307	1855	Washington	D.C.	500,000	50	5	Jan. & July	50,000	2,600	800	3 50	T. G. Turner	W. P. Freeborn	——	S. S. Damon	I	C	D L	
308	1859	Washington	N.C.	15,000	100	—	April & Oct.	1,500	70	30	6 00	Sam. Fowle	O. W. Telfair	Saml. Merrit	Same	I	R	W	L
309	1848	Washington	Pa.	30,000	20	—	Do.	4,000	190		3 60	G. W. Riggs jr.	Jos. F. Brown	Sam. R. Brick	Owen O'Hare	C & I	C	D L	C
310	1854	Waterbury	Ct.	100,000	25		Do.	6,000	225	36	4 00	W. M. Kennan	Jno C. Hastings	S. Meredith	A. Brady	I	C	D L	L & C
311	1852	Waterford	N.Y.	12,000	25		Do.	4,000	100		4 00	C. B. Merriman	H. B. Field	Same	Same	I	C	D L	L
312	1852	Watertown	N.Y.	20,000	100		Do.	10,000	260	36	7 00	John Cramer	W. T. Seymour	Charles Knickerbo	ker.	r. I	R & C	D L	L
313		Watertown	Wis.	25,000	100		Do.	5,000				A. G. Story	F. T. Story	Same	Same	I	R	—	L
314		Wautoma	Wis.	30,000			Do.	3,000											
315		Waverly	Miss.	20,000	100		Do.	4,000											
316		West Cambridge	Mass.	50,000	100	—	Feb. & Aug.	4,000	100	20	4 00	Estes Howe	J. H. Converse	E. P. Cowing	Same	I	C	D L	C
317	1852	Westchester	Pa.	100,000	25	2½	Do.	3,500	546	68	3 50	John Marshall	Geo. W. Pearce	R. M. Frame	Same	I	C	D L	L
318	1857	West Point	N.Y.	Governt.	Wor	ks.	United States	Military	Academy.							I	C	D L	L
319	1853	West Troy	N.Y.	100,000	50	3	Jan. & July	10,000	425	—	3 60	Albert Richards	W. L. Oswald	Same	Same	I	C	D L	C & L
320	1850	Wheeling	Va.	75,000	25	6	Do.	13,000	700	129	2 70	J. Hombrook	G. T. Single	——	J. C. Wiley	I	C	D L	C & L
321	1856	Wilkesbarre	Pa.	50,000	50		Do.	4,000	450	50	3 80	S. R. Dicken	Volney Maxwell	——	Marcus Smith	I	C	D L	L
322	1850	Williamsburg	N.Y.	337,500	50		Do.	60,000	1,700	631	3 50	B. H. Howell	C. F. Blodgett	J. R Thomas	Same	I	C	D L	L
323	1857	Williamsport	Pa.	70,000	25	4	Do.	8,000	257	—	3 80	John K. Hays	T. Coryell	J. Dittmore	T. Coryell	I	C	D L	L
324	1859	Willimantic	Ct.	12,000	--	—	Do.	2,500	New.	—					W. J. Miller	I	C	D L	L
325	1853	Wilmington	N.C.	60,000	50	5	Do.	8,000	286	62	5 00								
326	1852	Wilmington	Del.	200,000	50	5	Feb. & Aug.	20,000	1,300	150	3 50	Stephen Bonsall	Jno. A. Duncan	——	T. J. Mahaffy	I	C	D L	L
327	1854	Winchester	Va.	35,000	50	6	an.—Mar.	5,000	195	40	4 00	W. B. Baker	W. R. Denny	C. W. Price	Same	I	C	D L	C
328	1856	Woodstock	Vt.	10,000	50	4	Jan. & July	4,000	79	2	6 00	A. Stevens	S. E. Minger	——	Lewis Platt	I	R	W	C
329	1858	Woonsocket	R.I.	82,600	100	4	April & Oct.	4,000	200	—	3 50	H. C. Kimball	O. J. Rathbone	——	Waldo Earle	I	C	D L	C
330		Wooston	O.	30,000			Jan. & July	6,000											
331	1849	Worcester	Mass.	120,000	100	5	Do.	15,000	980	128	3 50	Geo. T. Rice	Wm. Cross	Jas. B. Blake	Same	C & I	C	D L	C
332	1854	Yonkers	N.Y.	70,000	50	3½	Do.	6,500	300	—	3 80	T. C. Cornell	W. W. Scrugham	——	Wm. Beal	I	C	D L	L
333	1849	York	Pa.	40,000	50	3	June & Dec.	10,000	320	37	4 00	Alex. Small	W. S. Roland	——	Alex. J. Frey	I	C	D L	L
334	1858	Ypsilanti	Mich.	20,000	50		Feb. & Aug.	6,000	140	20	4 00								
335	1848	Zanesville	O.	55,000	25	4	Do.	10,000	820	77	3 50	Adam Peters	Thos. Halpin	——	A. J. Printz	C & I	C	D L	L

† Superintendents of Manhattan Gas-light Company's Stations:—Walter Roome, William Coombe, Charles Smith, Thomas Marsh.

GAS-LIGHT COMPANIES IN THE BRITISH PROVINCES.

1		Belleville	C.W.	50,000									Manager.	——					
2		Brantford	C.W.	50,000									——	——					
3		Brockville	C.W.	50,000				5,000						——					
4		Cobourg	C.W.	40,000				4,500						——					
5		Dundas	C.W.	30,000				6,000						——					
6	1843	Halifax	N.S.	160,000	40	6	May	30,000	1,274	161	3 00	A. M'Kinlay	Geo. Buisch	——		C & I	C	Oxide	L
7		Hamilton	C.W.	50,000										——					
8	1848	Kingston	C.W.	80,000	100	5	Mar. & Aug.	12,000	400	106	3 50		John Kerr	——		I	C	D L	L
9	1853	London	C.W.	100,000	20	5	May & Nov.	5,000	350	112	5 00	Wm. Barker	Edw. Glackmeyer	——		I	C	D L	L
10	1847	Montreal	C.W.	300,000	40	4	Mar. & Sept.	80,000	2,030	500	3 25	Thos. Molson	Louis Beaudry	——	John McElroy	C & I	C	D L	L
11	1854	Ottawa	C.W.	40,000	20		Do.	5,000	300	50	4 50	H. J. Friel	Geo. Henbach	——	James Perry	I	C	D L	L
12		Point Levi	C.E.	75,000			Do.							——					
13	1847	Quebec	C.E.	200,000	200	4	Do.	60,000	1,217	365	3 00		Wm. Walker	——	P. Peebles	C	C	D L	L
14	1859	Port Hope	C.W.	28,000	20		Do.	4,500	150		4 50		E. Erlandson	——	H. Maxwell	C & I	C	D L	L
15	1848	Saint Cathrine's	C.W.	80,000	20	3	Do.	7,000	250	† 42	4 00	W.H.Merritt jr.	J. T. Parker	——	C. Millward	C	C	D L	L
16		Saint John	N.B.	160,000	80	4	June & Dec.	20,000	1,400	225	3 50		H. Britany	——					
17		Saint John	N.F.	50,000				30,000						——					
18	1848	Toronto	C.W.	400,000	100	4	Feb. & Aug.	50,000	1,919	874	3 33⅓	R. Yates	H. Thompson	——	——	C & I	C	D L	L

† Also 60 Public Lamps on Welland Canal.

CUBAN, MEXICAN, & SOUTH AMERICAN GAS-LIGHT COMPANIES.

1	1844	Compania Espanola	Hav.	1,250,000	500	7½	Jan. & July	750,000	5,537	1,715	5 00			J. F. Harrison					
2	1857	Compania Cubana	Hav.	500,000	500	10	Do.				5 00								
3		Cardenas	*	50,000			Do.	180,000	90		5 00								
4		Cienfugos	*	50,000			Do.	25,000			5 00				John Goodwin				
5		Guanabacoa	*	50,000			Do.	40,000			2 00								
6		Guyaquil	S.A.	150,000			Do.												
7		Lima	S.A.	100,000			Do.												
8		Matanzas	*	50,000			Do.												
9		Mexico City	Mex.	550,000			Do.												
10		Montevideo	S.A.	500,000			Do.												
11		Regla		50,000			Do.												
12		Rio Janeiro	S.A.	500,000			Do.												
13	1858	Saint Jago de Cuba		500,000	500	5	Do.	40,000	2,000	1,000	5 00	F. Fabars	S. B. Morris	Same	Same	C	C	D L	T & B
14		Trinidad de Cuba		50,000			Do.												
15		Valparaiso	S.A.	500,000			Do.												
16		Vera Cruz	Mex.	500,000			Do,												
17		Ville Clara	*	50,000			Do.												

* Estimated.

For the American Gas-Light Journal.

ON THE DETERIORATION OF COAL-GAS.

To the Editor of the American Gas-Light Journal:

Dear Sir:

Being indebted to your forethought for the information that your correspondent T. W. P., is Theodore W. Parmele, Esq., of your city, I feel compelled to trespass on your columns to some extent to reply to his remarks in the last number of the American Gas-Light Journal.* And, while I regret the necessity for occupying more of your space than the intrinsic interest of the subject warrants, I do not see how my reply can be condensed, without doing injustice to Mr. Parmele. To begin with the beginning, Mr. Parmele oddly enough speaks of "a "note from Professor Aikin, in which he attempts to "trace a relationship between his unfortunate deductions "and the experiments of Dr. Torrey." I say oddly enough, because the note, instead of being an attempt to trace a relationship, was written to show, and does show, the absence of any relationship between Dr. Torrey's experiments and mine, and between Dr. Torrey's deductions and my own; at least, any relationship that could bring his experiments, or his deductions, in opposition to my own. And the note shows this by showing that the conditions of Dr. Torrey's experiments were entirely different from the conditions of my own, and that the object of his inquiry was widely different from what I had in view. My experiments having been conducted in a particular manner (elsewhere fully described), were intended to furnish an answer to the question, "To what extent will the illuminating power of "coal-gas be impaired by keeping it in contact with "water for noted periods?" And Dr. Torrey's experiments having been conducted in a different manner, were apparently intended to demonstrate a different proposition, namely, "that a certain quantity of water cannot "deteriorate coal-gas to an unlimited degree." Incidentally, Dr. Torrey's third experiment, so far as it proved any thing, confirmed my own. If this plain demonstration of a difference is what Mr. Parmele calls attempting to establish a relationship, he uses language somewhat differently from that admitted by any lexicographer I have yet encountered. As for my "unfortu-"nate deductions," if Mr. Parmele can find a single one that he can himself deny, without placing himself in opposition to the whole scientific world, I will abandon it; but the deduction must be my own, and not manufactured for me by any one else, and it must be given in my own words. Another flight of fancy is what Mr. Parmele calls my "practical abandonment" of my theory. I deny that there has been any abandonment, practical or theoretical, of any theory on my part. I deny that I have had any theory to abandon. It rests with Mr. Parmele to show what the theory is, and when, and where, it was abandoned. And, again, the theory must be my own, and in my own words, or I shall deny all responsibility for its paternity. Whether Mr. Parmele means hypothesis when he speaks of theory; whether he recognizes the difference between them, or whether they are with him synonymous terms—he does not inform us.

Again, I must join issue with Mr. Parmele on what he calls my "wholesale repudiation of the means at present "employed in gas making." If I have expressed such repudiation, it certainly can be shown in print, not in the shape of unwarrantable inferences drawn from my language, but in plain terms; and if such are not to be found, then I have made no such repudiation. And if Mr. Parmele says I have, when, in reality, I have not, the least that can be said is, that his statement is not correct. What I attempted to show was, "that the "manufacture of coal-gas, of proper quality, is neces-"sarily embarrassed with so many and such difficulties "that the utmost watchfulness is required on the part "of every one concerned; and, furthermore, that these "difficulties are of such a nature that the whole risk of "loss rests on the consumer, while the manufacturer is "comparatively safe." If this is what Mr. Parmele means by "wholesale repudiation of the means at "present employed in gas-making," he will, probably, stand alone in his interpretation of the English language. Again, he charges me with a "broad insinuation against "the honesty of those engaged in the business, attri-"buting all increase in the bills of a consumer to some "mismanagement or neglect on the part of the gas com-"panies to that consumer's injury." My answer to this must be a simple quotation from the very article Mr. Parmele had before him when he penned the charge.

"If in the past any careless expression may have "escaped me that could possibly bear any improper "interpretation, I can only express my regret, and em-"phatically disclaim, for the past as for the present, all "intention of imputing any thing of fraud or dishonesty "to the parties engaged in the management of our "various gas-works."

Mr. Parmele next says;

"Professor Aikin repeated the experiment in the same "manner detailed in a paper originally read before the "American Association for the Advancement of Science, "&c. Of course the same objections apply to the repe-"tition, that were urged by Dr. Torrey in his remarks "on Professor Aikin's original paper."

To show how carelessly Mr. Parmele reads, as well as writes, or how imperfectly he understands what he reads, I need only quote the passage to which he refers:

"My attention was directed to the possible deteriora-"tion of coal-gas in illuminating power, by injudicious "exposure to water, in consequence of an accidental ob-"servation many years since. A jar of coal-gas that "had been set aside on the shelf of the pneumatic "trough in the laboratory, for experimental purposes, "on one day, was not required until the following. "Then, on examining its condition previous to use, its "illuminating power was found so fully impaired, that "it was at once thrown away as useless, and a fresh "supply obtained. The apparent explanation, that pos-"sibly some thoughtless visitor had carelessly raised "the jar and replaced it, allowing atmospheric air to "become mingled with the gas, seemed very probable at "the time, and the fact was neglected. But it was "recalled to mind some eighteen months since, when "the variable character of coal-gas became a subject of "public discussion. And upon repeating the experiment "in the manner detailed in a paper originally read be-"fore the American Association for the Advancement of "Science, and reprinted in the August number of the "American Gas Light Journal, I obtained certain re-"sults that satisfied me there needed no accidental ad-"mission of air to explain the feeble light in my first "observation, but that the change was due to a great "loss of the light-giving constituents of the gas which "had been abstracted by the water."

Again, Mr. Parmele brings another charge;

"Without attempting to disprove Dr. Torrey's state-"ments, and without the magnanimity to admit that his "own experiments were defective, he makes a new "issue."

Did Mr. Parmele expect me to attempt to disprove an admitted truth, almost self-evident? Did I not characterize as an error the mere supposition of any difference of opinion between Dr. Torrey and myself? While I adopt without reserve his conclusion "that a certain "quantity of water cannot deteriorate coal-gas to an "unlimited degree," I have yet to learn that he denies my own conclusion, that coal-gas cannot be kept in contact with water ever for a brief period without a notorious depreciation in its illuminating power. Or, does Mr. Parmele consider the two propositions at variance? To admit that my own experiments were defective, would be to admit what I have all along denied. I maintain that there was no defect in my experiments that could possibly vitiate my deductions. If any such defect really existed, is a matter for demonstration, not for vague conjecture—a fact to be shown, not merely asserted for effect. The new issue which Mr. Parmele has discovered is, "that if the gas is not injured by "remaining in contact with water in the gas-holder, *it* "*is deteriorated in other ways.*"

In truth, this new issue was simply pointing out the fact that the injurious action of water was not necessarily restricted to the gasometer of the gas company, but must be co-extensive with the contact of water and gas. Whenever and wherever the two are brought together, more or less injury to the illuminating power of the gas must result. Mr Parmele states: "He conceives there is a great loss of illuminating con-"stituents in the washing of the gas." But I beg leave to say, that I conceive no such thing; what I do conceive is, that "a serious and unnecessary loss of illum-"inating power would follow any unnecessary contact "with water where the washing happened to be too "long continued."

Does Mr. Parmele see no difference between these two propositions? If he does not, his case is hopeless. If he does see the difference, why did he not state the proposition correctly? Again, Mr. Parmele states, as his own opinion, that, "although there is a small loss occa-"sioned by this process, the loss, whatever it may be, "falls on the manufacturer, for it is the purified article "that is tested by the photometer." If the manufacturer charges by the photometer scale, as no one does, then, and then only, would this be true. If he charges by the cubic foot, as all do, then any loss of illuminating power in the gas, so far from imposing any loss on him, would inevitably increase his profits—since the diminished photometer value of the gas would necessitate the consumption of a greater number of cubic feet to supply the consumer with his accustomed light. Or, does Mr. Parmele mean that the loss of bulk that would be occasioned by any loss of illuminating material, would be a source of loss to the manufacturer? If he does, I would suggest to him to apply to some scientific friend to explain to him why such a supposition involves a physical impossibility, and is necessarily an absurdity. "But what does Prof. Aikin mean when he says, that "if the gas at any time is not as nearly as possible in-"odorous, a general outcry is immediately raised and "continued until the nuisance is abated." The Profes sor means exactly what he says, nothing more nor less; and although he might think it rather hard—as the lawyer told the Judge—to be called upon to furnish both argument and understanding, yet he will endeavor to bring his meaning within the comprehension of the dullest capacity. When coal-gas has been deprived of all foreign impurities, such as sulphuretted hydrogen, ammonia, bi-sulphide of carbon, &c., &c., it is then as nearly as possible inodorous. If I had meant absolutely inodorous, I would have said so, but as I meant only possessing the odor that properly belongs to it—that is, as nearly as possible inodorous—I said so. "Did the Professor ever see such gas?" asks Mr. Parmele. Let Samuel Weller answer for him: "If my pair of eyes wos a "pair o' patent double million magnifyin' gas-micro-"scopes of hextra power, p'raps I might be able to see "it, but bein' only eyes, you see my wision's limited." But the Professor has occasionally smelt it without suffering any very great annoyance, and with sensations widely different from those experienced when compelled to breathe an atmosphere too highly charged with sulphurous acid, or with sulphuretted hydrogen, the frequent concomitants of impure gas. And when these impurities have been present he has always considered the gas was not "as nearly as possible inodorous." To quote Mr. Parmele again: "He also states, that coal-"gas cannot be kept even in close vessels (he evidently "means out of contact with water) for any great length "of time without serious injury." Certainly, that is exactly what I mean, and, furthermore, wiser men than myself state the same thing. Does Mr. Parmele dispute the correctness of the statement? In regard to the influence of the exhausting arrangements now in use at gas-works, until it can be shown that the mechanical arrangements are such that any air accidentally passing into a retort through a leak, cannot possibly pass into the hydraulic main under the influence of the exhauster, until such transmission of air is made physically impossible, the use of the exhauster must be accompanied by the risk of the admixture of air with the gas. Where by any means such transmission of air is made physically impossible, and certain joints are kept properly tight, and the exhauster itself properly used, it is not only unobjectionable, but eminently serviceable. Mr. Parmele says "the learned Professor objects to the use of clay retorts." I must beg leave to assure him this is an entire mistake; the learned Professor does no such thing. He merely quotes the language of certain English gas engineers, as giving their experience with the things, without even expressing an opinion of his own as to the relative merits of clay and iron. And this experience of our English brethren was intended to show that the difficulties in the manufacture of gas "are "of such a nature that the whole risk of loss rests on "the consumer, while the manufacturer is compara-"tively safe." Whether the clay retort is better or worse than the iron retort, whether the gas made by the one is better or worse than that made by the other, whether the process by one is cheaper or dearer than by the other, on all this the learned Professor has never expressed an opinion, and, furthermore, desires here to enter a solemn protest against having opinions manufactured and expressed for him by Theodore W. Parmele, Esq., or by any one else. The learned Professor is capable of forming opinions for himself, and can generally express them intelligibly. "In conclusion," says Mr. Parmele, "I will only add, that the Professor's "description of gas-making shows his entire want of "practical knowledge of the subject." Now, when and where did the Professor ever attempt to give a description of the process of gas-making? What a pity that Mr. Parmele has not given us this very faulty description! Then all could have judged of the Professor's shortcomings in his practical knowledge of the subject. But even if Mr. Parmele had succeeded in finding what does not exist—the description he refers to—and therewith proved the Professor destitute of all this practical knowledge, one might reasonably ask, Did the Professor ever claim to possess such knowledge? or, What has this question to do with the matters in discussion? Again, Mr. Parmele speaks: "And if he is a candidate for the "office he seeks to provide, he should obtain such in-"formation as to prevent a repudiation of the present "process, unless he can suggest one that may be more "reliable." Now, we have only to ask, What is the office in question? and we will see that, consistent to the "bitter end," the very last sentence of Mr. Parmele's communication, like the very first, involves an absurdity. That absurdity is here what lawyers call a "*non sequitur.*" The only allusion to office in all that the Professor has written, occurs in his first article in the American Gas-Light Journal, for August last. The allusion to office therein reads thus: "The difficulty suggests its "own remedy, and that would be, to have a standard of "quality established by the proper authorities, taking "the illuminating power as the basis of the calculation, "and then to have the requirements of such standard "insured by a nightly examination, if necessary, on the "part of some one entirely disconnected with the manu-"facture." What the duties of such an office can have to do with a practical knowledge of gas-making, it would be difficult for even Mr. Parmele's astuteness to point out. Does it require a practical knowledge of gas-making to enable a man to use a photometer correctly, or to detect any foreign or noxious admixture when present in coal-gas? Or, how far would it be the duty of the incumbent of such office, as those duties are defined by the Professor, to repudiate the present process of gas-making, or to suggest one more reliable? Suppose the Professor is qualified, or is not qualified, for any office; suppose he is a candidate, or is not a candidate—what possible connection has all this with the statements which he gives as scientific truths, or with the conclusions he gives as the logical and inevitable deductions from those truths? There are but two ways to convict a man of scientific error, and these are, either to show that what he considers facts are not facts, or to show that his deductions are fallacious or unreasonable, and do not necessarily flow from his premises. Whether the man is learned or unlearned, whether his

* On page 79 of the November number of the American Gas-Light Journal, a note informs your readers that your "correspondent T. W. P. is Theodore W. Parmele, Esq.," of your city.

knowledge is theoretical only, or practical only, or a mixture of both; whether he desires an office, or whether he has all that he wants—has no more to do with the truth of his premises, or with the accuracy of his reasoning, than would a difference in the color of his hair, or the fashion of his coat, or the cut of his whiskers. As well might I suppose that Mr. Parmele, being interested in the sale and in the use of clay retorts, and having fancied first that I objected to them, and having fancied next that such objection of mine would interfere with his business, concluded that the law of self-defence required him to put an extinguisher upon the Professor. Who does not see that such a supposition, like some I have had to encounter, would be ridiculously absurd, not pertinent at all, but, in legal phraseology, decidedly impertinent? To discuss scientific questions in a proper spirit with a man of science, and a gentleman, with one who can understand what he writes and what he reads, where one has time at command, is always interesting. It is by the collision of diverse intellects that the sparks of truth are elicited. But when it comes to bandying words without meaning, or to the use of epithets and personalities in the place of facts and arguments, and unsupported assertions in place of proofs, I take no interest in it. I have neither taste nor leisure for the solemn task of breaking flies upon the wheel. But while I would have preferred that your correspondent T. W. P. had remained anonymous and unnoticed, as I have been saluted by him by name, common politeness requires me to return the salutation this once, at least. But, so far as I am concerned, unless there should be a wonderful revolution in my sentiments, or some unlooked for contingency should arise, this discussion will end here. Mr. Parmele has had his say, and I have had mine, and we are even. Nor am I willing to admit that he can justly complain of anything I have written, since he himself has furnished the text for my comments. I have simply endeavored to stick to the text, but if, while so doing, I have unconsciously done him injustice, to learn it and to retract it; will be the same thing. The utmost that I can concede, as properly chargeable against me, is this—that, finding Mr. Parmele unwittingly resting on the horns of a dilemma, where, of his own free will, and without any agency of mine, he has chosen to place himself, I have been compelled in self-defence, to endeavor to fasten him there.

The dilemma is the obvious one—either Mr. Parmele does understand the English language, or he does not. If he does not understand the English language, then it was decidedly foolish for Theodore W. Parmele, Esq., to attempt to reply to what he did not understand; to attempt to reply to articles which I claim were written in plain English. If he does understand the English language, then Theodore W. Parmele, Esq., has wonderfully perverted it in his notice of my communication. For proof of which, I have here provided voluminous evidence, and I have a right to insist that this evidence shall be comfuted in plain terms, before any new issues can be noticed, or any new charges answered by

Respectfully, &c.,

WILLIAM E. A. AIKIN.

FOR THE AMERICAN GAS-LIGHT JOURNAL.

THE MOTION OF GASES.

THE undersigned intimated a disposition, a few weeks ago, to present some further considerations on the subject named in the present heading; and, accordingly, in compliance with a desire which seems to have been expressed in several quarters, he presents the following as the first of a series of communications bearing on the subject thus introduced.

Without expecting to present a single novelty in the discussion of a subject whose laws are so well established, as those which constitute the scientific basis of the dynamics of gaseous fluids, he will be abundantly satisfied with the results of his efforts in this direction, if he shall be able to facilitate in any degree an intelligent *application of these laws* to some of the numerous practical questions, which must be, more or less, ruled by these unrepealable dicta of nature.

GLENMORE.

INTRODUCTORY OBSERVATIONS.

1. In the construction or management of works for the preparation and distribution of Illuminating Gases—in the adaptation of arrangements for Warming and Ventilation in public and private edifices—in provisions for the application of currents of air in Metallurgic Operations—in devising arrangements for the Aeration and Ventilation of Mines and other subterranean works—as well as in the construction and use of some of the most important Prime Movers—the engineer has frequent occasion for the consideration of questions connected with the *motion of gases*.

To meet these questions properly, under the various circumstances of practice, requires something more than knowing how to make a series of computations, by means of certain formulas, whether empirical or rational. There should be an intelligent comprehension of all the elements practically affecting the given question. With the command afforded to the observer from such a point of view, he is prepared to judge with what propriety he may, in a given case, neglect the influence of certain elements that, under other circumstances, would have to be duly estimated.

THE ESSENTIAL ELEMENTS OF THE PHYSICAL STATE OF A GASEOUS FLUID.

2. The simplest considerations are sufficient to suggest that bodies so susceptible to external influences as the gases, must be more or less affected in their motions by variations in external conditions. Thus, knowing that the elastic force or tension of a gaseous body changes with every variation of volume or density, and remembering that variations in temperature tend to induce changes in density, it can readily be seen how the motion of a gas, primarily due to a variation of tension at different points, must also come to be dependent on the varying state of its density and temperature. It is, therefore, at once apparent that there are three elements of the physical state of a gas, upon which its motion must depend, namely, its *tension, density*, and *temperature*.

It may, then, be assumed that these elements, as fundamental data, should enter into the construction of every *general* formula of the motion of gases, whether the case presented be one of simple discharge through an orifice, or of the more complex flow through a pipe.

In proceeding to the development of our subject, it will conduce to clearness of apprehension, if we first consider the laws which regulate the mutual influence of these several elements, without regard to a state of motion. But prior even to this it will be expedient to examine the nature and action of an external influence affecting, more or less, all of these elements; we mean, the *pressure of the atmosphere*.

PRESSURE OF THE ATMOSPHERE.

3. We very naturally refer to atmospheric air, not only as the type of all gases, but as our point of departure when attempting the study of their laws of mechanical action. Atmospheric air is always at hand to serve an experimental inquiry, and, indeed, is to be encountered in every treatment of a practical kind to which we may submit the other gases.

Now, one of the most obvious indications of the presence of the atmosphere is to be found in its *pressure*, an influence which it continually manifests upon the different objects with which it comes in contact Although it is possible to conceive of circumstances under which this pressure may be excluded, yet, in general, in the conduct of practical operations, embracing the motions of isolated portions of atmospheric air, or of the other gases, the atmospheric pressure is an element whose influence is not to be disregarded; and in this light, it becomes a kind of datum of paramount consideration in all of this class of inquiries.

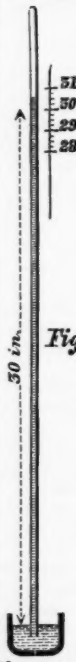

Fig1

4. There are various methods of determining the pressure of the atmosphere. Among these, the use of the mercurial barometer may be reckoned as the most convenient as well as most accurate. With this instrument, a column of mercury is made to balance, by its weight, the pressure of the atmosphere acting upon the base of the column,—to balance, in fact, the weight or pressure of a column of atmospheric air extending to the top of the atmosphere The height of the barometric column is evidently independent of the area of its base—that is to say, the height of the column does not depend on the size of the tube which contains it—the slightly varying influence of capillary attraction alone excepted.

5. But the height of the barometric column, which thus represents the pressure of the atmosphere, is more or less variable, within certain limits, at different times and places. At or about the level of tide-water, these limits are 28 and 31 inches—the height of the column rarely, if ever, becoming equal to the greater limit, and even more rarely falling so low as the smaller one. As a *somewhat prevailing or average height*, it is well known that we may adopt about 30 inches; and the requirements, not less than the results of experience, have long since led to the recognition of a *mercurial column of thirty inches in height*, as the measure of the mean or normal pressure of the atmosphere;—as such, this measure has become an important physical constant. In France, and to a considerable extent over the continent of Europe, the normal pressure of the atmosphere is taken at 0.76 metres, or 76 centimetres, equal to 29.92 inches—that is, nearly the same as that expressed in terms of the English unit.

6. A column of water, or of any other liquid, may also be made to balance the atmospheric pressure; and the height of such a column will evidently be inversely proportional to its density. Thus, for the height of an equivalent column of water, we require

30 X 13.596 = 407.88 inches = 33.99 feet,

where the number 13.596 represents the specific gravity of mercury, water being unity, both being taken at the temperature of melting ice. Placing H for the normal *pressure height* of the atmosphere, and we shall therefore have

[1.] H = 30 inches of mercury.
= 408 inches, or 34 feet of water.

7. Of course, it does not follow that the adoption of 30 inches of mercury, or 408 inches of water, as the measure of the normal pressure of the atmosphere, upon a basis partly real and partly conventional, supersedes the necessity of having regard to the actual pressure of the atmosphere, at the time and place of conducting a mechanical operation with the gases. But this is always easily determinable by a proper reading of the barometer—an instrument of which a good specimen, it is presumed, is to be found among the scientific apparatus of every intelligent engineer.

8. It is frequently desirable to know the pressure of the atmosphere, not as represented by the height of the barometric column, but as expressed in the weight of this column on a unit of its base. This is easily ascertainable. Observing that the height of the barometric column remains the same, whatever be the area of its base, let us suppose the area of the base of the column to be one square inch; then the mean or normal atmospheric pressure upon this base is evidently balanced by a column of mercury, giving rise to an opposing pressure equal to the *weight of thirty cubic inches of mercury*. But the weight of one cubic inch of mercury, at the temperature of melting ice, is *very nearly* 0.49 of a pound avoirdupois. Hence, placing P for the normal pressure, we have

[2.] $P = 0.49 \times 30 = 14.7$;

that is, *the normal atmospheric pressure is fourteen and seven-tenths pounds per square inch.*

9. The distinction between H and P, although apparently obvious, is sometimes confounded. It may be proper to repeat that, while we recognise the one as the *pressure*, the other will be understood as the *pressure-height*, of the atmosphere in its mean or normal state.

10. For any actual state of the atmosphere, let h represent the reading of the barometric column, we shall then have

[3.] $p = 0.49\ h$,

in which p becomes the pressure of the atmosphere in pounds per square inch. If, however, we have a water instead of a mercurial column to represent this pressure, we shall also have—

[4.] $p = 0.036\ h$,

in which the number 0.036 is *very nearly* the weight in pounds avoirdupois, of a cubic inch of water, at the temperature of 60° Fahrenheit; so that, h being observed in inches, the pressure p is still in pounds per square inch.

11. Formulas [3] and [4] may be used for computing pressures for *all values* of pressure-heights in mercury and water, and may thus be used for the small pressure-heights observed in manometers or pressure gauges.

G.

FOR THE AMERICAN GAS-LIGHT JOURNAL.

GAS-PIPING IN FRANCE.

I HAVE been up the Mediterranean for the last month, regarding the lighting of two towns with gas; and, amongst other curiosities, I saw a city of 20,000 inhabitants in Corsica, where the street-pipes were constructed of cement-concrete instead of cast-iron. In this instance they proved a failure. Cast-iron pipes are not allowed to be imported into France. Hence, I suppose, the reason for this novelty.

Throughout France the pipes are made of sheet iron, rivetted, and surrounded by a layer, about half an inch thick, of tar concrete-ashphalte. The street-lamps are universally lighted by pushing up a light through a movable door in the bottom of the lantern. The stop-cock is below in the cast-iron column, and is inclosed within a door, provided with a lock and key, which the lamp-lighter opens before he applies the light. He always "turns on full;" but there is also a cock in the lantern, which is regulated by a higher authority, and thus great regularity of flame may be obtained throughout the city, irrespective of elevation of position. The French have a law against the concealment of gas-pipes in houses, hence gas-fitting is often very unsightly—the gas-pipes being trailed along the ceilings, instead of being laid under the flooring-boards of the floor above, and neatly dropped, when wanted, through the ceiling. These notes of doings in other lands may interest some of your readers.

GEORGE ANDERSON.

104 Leadenhall street, London,
Dec. 8, 1859.

WALTON'S ANTI-FREEZER.—The cold snap that has come upon us is sure to give a twist to the gas-pipes, unless they are taken care of in advance. It is too late to look after them when the grip of Mr. Frost is upon them. Gas companies and others should inform themselves of the method of protecting them by addressing Mr. John Walton, Louisville, Ky., Gas-Works, even if it be only for the sake of information. In our new rooms we will have Mr. Walton's and Mr. Gengembre's plans set up for inspection.

NEW MATERIAL FOR GAS-MAINS.—The Ithaca (N. Y.) Gas Works are trying three-inch wood tubing that has been subjected to a pressure of a 100 feet head of water, and coated, inside and out, with coal tar. Mr. Cartwright is laying fifty feet of it in street mains, to test until spring, when he will report results.

FRINK'S IMPROVED GAS-LIGHT REFLECTORS.—An admirable light-provoker for the desk, or for public buildings and railway stations.

For the American Gas-Light Journal.

GHAS-TLY POETRY.

ADDRESS TO A HUMAN SKULL RECENTLY EXHUMED AT A GAS-WORKS.

Give us your story—if 'tis worth the telling—
My friend, you've long enough played dummy;
Go find your lips, go find your tongue and palate,
And be no longer mum, my *mummy!*

What color were your eyes—dark, brown, or hazel?
It matters not—they're given to the worms;
And yet their light, in photometric value,
Quite equal'd, once, a dozen "*standard sperms!*"

Where were you born, and who, pray, was your father?
Lived he through life an honest *stoker*,
And left you here, his vulcanized successor,
Inheriting his iron poker?

Didst ever love a strapping buxom maiden,
And on thy knee didst ever seat her,
Swearing thy love was honest, and as true,
As any—*compensating meter?*

You, maybe, were a hapless *engineer;*
Ah! then, repose, thou honest soul!
Whose humble aim and ambition was to be
Great Soyer's peer, chief cook in *frying—coal.*

Could you, indeed, have been a sharp *director*,
Who made gas stock to either fall or rise?
I wrong you, honest friend; I'll not suspect you—
"There is no speculation in *those* eyes!"

You were a *chemist;* then analyze thyself,
Tho' little other now than bone, alas!
Here's earthy matter, *three per cent. of ash*,
The rest, *carbonic acid gas!*

Out with your story! tell us something, really,
Of the dead past. I'm willing to be taught—
Leave off your grinning—it's not proper,
Oh! man of gas, to be without *retort!*

What! silent still? then, still remain demure,
Thy life, perchance, may not endure *inspection;*
And, now I see, now, by Jove! I'm sure,
You've nothing in your *upper section!*

J. A. S.

Engineer's Office, —— Gas-Works,
December 20th, 1859.

For the American Gas-Light Journal.

DISCOVERY OF NATURAL OIL-WELLS IN THE WESTERN PART OF PENNSYLVANIA.

Oil-Creek, which has recently become celebrated as the location of the most productive oil-wells in the world, drains, with its tributaries, the eastern part of Crawford and the western part of Warren counties, in the State of Pennsylvania, and after flowing about 15 miles in Venango county flows into the Alleghany River. This river has many tributaries, but it is only on Oil Creek proper that oil has been found in any considerable quantity, and to this part therefore public attention has been mainly directed. The stream has its rise in Oil Creek lake, and is between 30 and 40 miles in length. It flows, as do its branches, between forest-covered hills of 200 or 300 feet in elevation, on which are broad plateaux of excellent land. About midway between the lake and the river the hills bear off right and left, forming a beautiful valley about one mile wide and six in length. In the lower portion of this valley, Titusville is situated, and at its extremity the stream meets its principal tributary, which is known by the name of Pine Creek. Immediately below this the valley becomes again a narrow pass, and so continues with little variation to the river, a distance of 15 miles. It is in the delta of those two streams (Pine and Oil Creeks) that oil first makes its appearance in abundance on the surface, and there, and at intervals all the way to the river, are found acres of old pits which have evidently been used for the purpose of collecting oil, but by whom they were made, and at what period, are questions not easily decided. They are nearly filled with mud and rubbish, and are about six feet in length and four feet in breadth, and the same in depth. When cleared out the walls at the bottom are found to be supported by logs notched together.

This fact, together with its lying between the French forts of Le Bœuf and Venango, and their appearance as described by the first settlers who arrived in 1797, lead to the conclusion that they were made by the French at some period previous to the capture of Quebec by Wolfe in 1759, and I have no doubt that some traces of them may be found in the French annals of that time, though many reasons may have induced their silence on the subject of discoveries in the disputed territories.

That the French were here we know, and being here they could not avoid the discovery, and the great amount of labor expended on those pits renders highly improbable the supposition that they were made by Indians, who could have obtained all that they required without such extensive and to them unwonted labors.

Until recently the greater part of the oil obtained was from two springs, one of which was situated half a mile below the point where the two creeks meet, and just where the hills approach and make the narrow pass mentioned above; the other and more productive spring is within a mile or two of the river. The mode of obtaining it was simply to spread a woollen cloth on the surface of the water, and when saturated with oil this cloth was wrung into a vessel. About twenty years ago the upper spring came into the possession of E. Brewer & Co., who are engaged in the lumber trade. Some five years ago this spring was sold to a New York company for five thousand dollars; from the latter it passed into the hands of four men in New Haven, one of whom, E. L. Drake, sunk an artesian well to the depth of sixty-nine feet, near the old spring. At that depth he found oil in great abundance, and although it has been pumped with a steam-engine day and night the quantity appears rather to increase than to diminish. *The yield is now about one gallon per minute.* At the lower spring, near the river, a well has just been sunk which is discharging enormous quantities, but owing to a rise in the stream it cannot be estimated. It appears to be driven up by the gas which accompanies the oil in all cases.

Such success has of course created a good deal of excitement, and there has been a perfect deluge of capitalists from all parts, and all the land on the creek has either changed hands or has been leased. Many wells have been commenced, and all who are operating on the lower fifteen miles of the creek, between the two old springs, are cheered with the most flattering prospects of success, and are finding oil in increasing quantities as they proceed.

It is almost demonstrated to my mind, and is the opinion of many others, that wherever may be its origin the valley of the creek is its channel. It is an exceedingly deep cut, and oil may be found on any part of it by digging from two to five feet, but the surface oil is not esteemed sufficiently remunerative since Drake's discovery, and no attention is paid to it except as an indication of the existence of oil beneath.

The mode of sinking a well varies in different localities. Near Petersville the earth is alluvial to a great depth, and is very full of water beneath, which renders digging impossible, and its gravelly nature renders boring equally so. To obviate this they drive down to the rock iron tubes of from four to six inch calibre. These they have to drive 45, 50, and in one instance 100 feet. They then drill the rock to the required depth. All who have pierced the rock on the flat to any depth have found oil in greater or less abundance, and gas in such quantities that it would require but few wells to light a city. In the one spoken of above, with the 100 feet of tubes, the gas rises with such force as to be heard at a distance. A few days since, one of the workmen applied a match to the mouth of it, and the gas exploded with sufficient violence to shake the ground around it and with a loud report.

Since the excitement has existed, we have heard of oil being discovered on all the branches of Oil Creek, and over a large extent of country. On the river and its other tributaries from Olean to Tarentum, and at the latter place, a well has long existed which was the most productive one known previous to that of Drake; but, thus far, none have succeeded who have bored, except in this neighbourhood. At Franklin and other points on the Alleghany, they have reached the depth of 150 feet without success, and thus far everything appears to point to this as the grand centre of the Seneca oil; and the only question, the decision of which will settle the future prosperity of this district, is, whether it will be permanent. I think it will; but many believe that oil, like coal, is produced in a determinate quantity, and may be exhausted. The latter opinion, however, is opposed by the fact that it has been running away for ages in large quantities. Some idea may be formed of the quantity discharged, from the fact that two hundred barrels which were accidentally lost in the creek made no perceptible difference three miles below.

Wm. B. Shugert, M.D.

Titusville, Pa., Dec., 1859.

For the American Gas-Light Journal.

MR. T. A. HEDLEY, GAS-ENGINEER, &c., AND THE ENGLISH GAS JOURNAL.

To the Editor of the American Gas-Light Journal:

Dear Sir,—As the editorial censures in the English journal in regard to Mr. Hedley's examination of the gas made at the Luton Works, in England, some time since, may have misled others as well as myself, I think it no more than an act of justice to Mr. Hedley, who has been denied the privilege of defending himself in his own country, to give him an opportunity of being heard there through your columns. In a letter received from him a few weeks since he writes: "The editor of the *English Journal of Gas-Lighting* declined in his notes to correspondents to publish my reply to his remarks. I send you a copy of that reply, and can assure you I had no ungenerous suspicions. I went to Luton on behalf of the local board of health, and endeavored to perform my duty honestly and straightforwardly, and to the interest of my clients. The editor of the journal should have stated that he was the consulting engineer to the Luton Gas Company, and it would have stamped the article in question with its true value. I am glad, however, to be able to state that since the local board of health determined to adopt my recommendation to fix a photometer, and have repeated tests made of the illuminating power of the gas, it has, I believe, never been proved (and that in the town) lower than the Parliamentary standard." Any comment upon Mr. Hedley's communication at this time would hardly seem necessary. As an honorable man and a man of science, his statements of facts must command belief, however they may militate against the pecuniary interests or the theories of any individual or corporation.

William E. A. Aikin.

Banbury, England, December, 1858.

To the Editor of the Journal of Gas-Lighting:

Dear Sir,—I am much obliged for the insertion of my letter of the 7th inst. in your last number of the *Journal*, but as you have again thought proper to make me the subject of your editorial remarks, I beg to submit the following short reply. I do not mistake the position I have placed myself in by simply doing my duty to my clients, and I most positively do not admit the possibility of gas losing nearly half its illuminating power in traversing a few hundred yards. I do admit the possibility that such a thing as 8-candle gas can be practically manufactured, and I am prepared with competent witnesses to prove that in the months of April and October last the Luton Gas Company were successful not only in making but in supplying such gas to its customers, and in their application to Parliament only proposed to supply "10-candle gas." I most certainly did not feel called upon, after several days' careful experiments, to ascertain if any accidental circumstance had caused the want of illuminating power in the gas, because such circumstance must have been in existence from April to the 27th of October. I do not admit that I have "accepted the apparent indications of notoriously unreliable instruments as facts, though they were in direct contradiction to each other." I accept only the results obtained from my own experiments as made in the town, and which can be verified with regard to the apparatus at the works. I reported without comment the result of my visit to the works, but I am prepared now, in justification to myself, to assert that the gas being tested at the works was not the same as that being supplied to the town, unless it was naphthalized. My credulity was not imposed upon, and I endeavored to perform an unpleasant duty in as gentlemanly manner as possible.

I was not aware that the Luton Gas Company had a photometer fixed in the town open at all times to all, and shall be glad to let the inhabitants know that one step in the right direction has been taken. I did not assert that the improved gas was owing to the notice to lay a new service pipe having been given to the company. It was the reason given to me at Luton by some of the persons who asserted that the gas had greatly improved during the few days previous to my visit, and what is more extraordinary, is, that for a time the high illuminating power was held up, but it has gradually fallen off, and it is now only 12 candles. But, of course, no one can complain of this, nor will, I suppose, as long as the Parliamentary standard is kept up. I feel that I have taken up quite enough of your valuable space, and thanking you for the feeling allusion to the honored name I bear,

I am, sir, yours truly,
T. A. Hedley.
Consulting Engineer.

For the American Gas-Light Journal.

ON THE PASSAGE OF GAS.

In making some calculations to determinine the proper size of a valve for a compensator to pass a given quantity of gas per hour, connected with an exhauster, I am at a loss for a correct formula to compute the passage of gas through an orifice in a thin plate.

William Pole gives the following equation for calculating the flow of gas through pipes:

Q—Quantity of gas per hour, in cubic feet.
l—length of pipe, in yards.
d—diameter of pipe, in inches.
h—pressure, in inches of water.
s—specific gravity of gas, that of atmospheric air being 1.

$Q = 1350 \times d^2 \sqrt{\frac{h\,d}{s(l+d)}}$. Using this formula, I find that a circular orifice 4 inches diameter, in a plate half an inch thick, with a pressure of 2 inches, will pass 42,465 cubic feet of gas of the specific gravity of 0.5 per hour.

J. F. D'Aubuisson gives 0.60 to 0.70 as the co efficient of contraction for water passing through orifices in a thin plate. If gas in its passage is subject to the same contraction and law, take in the above calculation 0.60 as the co-efficient of contraction, and it would reduce the quantity passing through the 4-inch circular orifice to 25,479 cubic feet per hour.

Probably some of your correspondents will oblige me by inserting in the American Gas-Light Journal a formula for computing the passage of gas through orifices in thin plates.

Robt. G. Courtenay, Prest.

Louisville (Ky.) Gas-Works, Dec. 13th, 1859.

Musical Gas-Pipes.—Ullman gave us for a *prima donna* at the opera a *Gazza niga*, and not content with her, he brought out a *Gassier*.

THE AMERICAN GAS-LIGHT JOURNAL represents the three important interests—

LIGHT, WATER, AND SEWERAGE.

Its purpose is to ascertain and make known all new discoveries in the science and economical application of GAS-LIGHTING, and promote thereby the interests of companies and of consumers; to encourage and aid the introduction of PURE WATER from Lakes and Rivers into Towns and Cities, and to improve the system of SEWERAGE, VENTILATION, and DRAINAGE everywhere.

Incidentally with these results, the business of all Gas Fitters and Plumbers, the erection of Gas-Works and Water-Works, the consumption of Coals, the manufacture of Gas-Pipe, Water-Pipe, Gas Fixtures, Gas-Meters, Water-Meters, Retorts of iron and clay, and their varied apparatus; of Drain Pipes, Ventilating, Heating and Dredging Machines, will be increased immeasurably.

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New works are now springing up, however, every week, and they will continue to increase rapidly hereafter.

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THE AMERICAN GAS-LIGHT JOURNAL is published on the first day of each month. It will be issued more frequently whenever it shall appear to be demanded, and it will be enlarged from time to time to keep pace with the requirements made upon it.

All new inventions relating to the Gas-light, Water, and Sanitary interests; all legal decisions affecting the rights of companies and consumers; all progressing and projected works; all experiments and plausible theories: in fine, every item of intelligence relating to its three prominent *specialties*, will be found in the columns of the AMERICAN GAS-LIGHT JOURNAL.

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The titles of communications and the names of authors should be fully given. The articles intended for any number should be sent in, if possible, by the 15th of the month, or the pages may be preoccupied.

The American Gas-Light Journal,

ISSUED MONTHLY.

MONDAY, JANUARY 2, 1860.

WE call the attention of our readers to an able essay on condensation which appears in another column. It is from the pen of an intelligent and experienced engineer connected with one of the best conducted and most prosperous gas companies in the South. We are glad to find that although the superintendence of gas-works is too often entrusted to men unqualified by experience, culture, chemical knowledge, and habits of patient observation, still there are numerous engineers in this country and in Europe, who, by unremitting toil and well-directed study, are making themselves acquainted with the wide range of scientific knowledge, indispensable for the successful conduct of a gas establishment. No error is more frequent or more fatal than to suppose that the apparently simple process of gas-making may be entrusted to ignorant, untrained men; for perhaps scarcely any other manufacturing operation can be named that requires more philosophic habits of thought, or will better repay the ingenuity, administrative ability, and watchful care of the operator. In few professions is it more strictly true that "knowledge is power," and that skill insures success. We shall give a hearty welcome to communications of a practical nature, however brief, from managers of gas-works, and from others interested in the manufacture of gas; for the results of experience and the observations of intelligent minds are interesting in themselves, and cannot fail to augment the sum of human knowledge.

From our young engineers especially we would invite communications, begging them to remember that one test-fact faithfully recorded, or one illustrative experiment clearly represented, is worth more than whole volumes of vapid declamation or plausible argument. In the ardent minds of these rising young men are thoughts, plans, methods, which contain probably the germs of future discoveries. The science and art of gas-making are in their infancy, and future improvements will be more rapid in proportion as the thoughts of practical, gifted men find utterance. It is well known that coal distilled at the heat of 212 to 700 degrees gives forth vapors which, if condensed, yield valuable oils and other useful products. At a higher temperature gas is evolved, the most desirable and economical amount lying between 800 and 1000 degrees, so that the range of heat adapted for the production of oil ends, where that of gas-making begins. Mixed with the newly-generated gas, as it issues from the retorts, are certain volatile matters which must be got rid of before the gas is fit for public use. Two expedients have been resorted to, with a view to separate these impurities. First, the gas is cooled, and at once a portion of these vapors condense, and, being only in mechanical combination with the gas, they separate and are precipitated to the bottom of the vessel. This process is called *condensation*. Secondly, the remaining impurities, which, from chemical affinity, cling more obstinately to the gas, are removed by the use of chemical expedients—a process technically known as *purification*. It is with the former of these two processes that we are now chiefly concerned, and what has been said sufficiently explains the oft-repeated axiom, that gas "skilfully condensed is half purified."

Probably no process connected with the art of gas-making requires from the engineer more ability and care than condensation; one reason for which is found in the fact that if coal-gas is cooled below a certain temperature, the carbon vapor combined with it, and conferring the chief elements of its illuminating brilliance, separates and is deposited. At a temperature of 45 degrees this wasteful process goes on with great rapidity, and from this cause an inexperienced or ignorant engineer may, through his well-meant desire to secure thorough condensation, overshoot his mark, and seriously injure the quality of his gas; and it is worthy of note that by this malpractice the richest gases suffer most, and when cooled down to too low a temperature lose the largest amount of their illuminating properties. Hence, the engineer referred to in the essay of our correspondent did right, and acted on the most approved scientific principles, if, having condensed his gas too much, and impaired its light-giving properties, he curtailed the refrigerating power of his condensing or washing apparatus, and thus prevented the undue separation of the volatilized carbon vapor; for this it was his duty to retain in combination with the gas, that as much of it as possible should be carried on to the burners, and the largest amount of brilliancy be imparted to the flame.

Another reason why the process of condensation is so important, and the necessity for watching and controlling the operation is so indispensable, is, that mischief as surely results from too little condensation as from too much; for, except the gas be sufficiently cooled before entering the purifying apparatus, it carries with it the vapors and impurities which should have been previously cleansed away. The result is, that the lime, and other chemical reagents employed, are not only prevented from acting properly, but more is required. Thus the expense of the operation is seriously increased. The chemical changes, essential to effective purification, are also disturbed. Hence, imperfect condensation induces costly and imperfect purification, and the tarry vapors, being carried forward into the mains and pipes, are there condensed and deposit themselves, choking up the valves and pipes, causing inconvenience to the consumers of gas, and impairing the action of the stop-cocks and fittings. These tarry deposits are often precipitated at a considerable distance, and have been found in pipes a mile and a half from the gas-works, even after traversing mains and pipes of different diameters and different levels. Against these and similar inconveniences it behoves the engineer to guard by effectually cooling his gas before it leaves the condensing apparatus, and is submitted to the chemical processes of purification.

Many interesting questions suggested by the study of this subject invite, and will reward, investigation. Among these is the question as to the conditions most favorable to the complete volatilization of the bituminous vapor of the coal, so that before it leaves the retort it shall assume a gaseous character, and remain closely incorporated with the gas up to the moment of its consumption. Again, since this carbon vapor is often condensed and deposited in the mains and pipes, the conditions under which this deposit takes place, during the transit of the gas, should be thoroughly understood, and will suggest practical measures for preventing the waste of this precious illuminating element. The arrangement, too, of the pipes, syphons, and other parts of the most improved condensers, with the best methods of regulating the condensing power and adapting it to the quality of the coal and to the temperature of the external air, suggest enquiries of great practical importance; and the inventions of Perks, Malan, Kirkham, Wright, Spice, and others, show with what rapidity more economical and effectual methods may be discovered when once the earnest attention of ingenious minds is awakened. And who can doubt that in the future history of condensation, discoveries and improvements will be realized as much superior to the best methods now in use as these are to the rude expedients formerly employed?

The discovery of extensive oil-wells in Western Pennsylvania cannot fail to arrest the attention of our readers. A bottle of this oil has been sent to us by Messrs. Bloomfield & Tracy, the lessees of the principal well. It is of a dark claret color, and has a strong smell of carbon. An interesting history of the wells will be found in our columns, and the following note from Dr. Torrey gives some details of the nature of the oil:

JOHN B. MURRAY, Esq.:

My Dear Sir,—I have made a few experiments on the rock oil or naphtha which you sent me, but have had no time to make a thorough examination of it. It appears to be very near in its leading characteristics to the rock oil described by Prof. B. Silliman, Jr. The specific gravity is 0.835; when heated over a spirit lamp it begins to boil at about 280° Faht., but the thermometer rises to 400°, and there remains nearly stationary till a considerable portion of a colorless liquid is distilled over. By conducting the distillation at a lower temperature a portion was condensed having a boiling point of 300°. I obtained no product having a lower boiling point than 280°. I have no doubt that the oil merely rectified by a single distillation could be burned to advantage in a properly constructed lamp.

Yours truly,
JOHN TORREY.

U. S. Assay Office, New York, Dec. 23d, 1859.

We may receive a more extended report of this oil hereafter, from Major Alden, late of U. S. Army, who is now on the spot, and is thoroughly posted on the subject.

We are told that the cost of producing this oil is one cent per gallon, and that it is sold at ten cents per gallon. If this is true, what will become of Kerosene at eighty-five cents per gallon?

The letter of Mr. Hedley, the well-known English gas-engineer, finds a place and a welcome in

these columns. We repeat the notice in our last issue that our pages are open to all contributors—American and foreign. We all may

"Find tongues in trees, books in the running brooks,
Sermons in stones, and good in everything."

And we invite all to join us, and they shall be heard. There are no partisan interests to be protected or promoted by the AMERICAN GAS-LIGHT JOURNAL.

It will be observed that the office of the AMERICAN GAS-LIGHT JOURNAL has been removed to the spacious Rooms in the new Iron Buildings, No. 254 Canal street, East, near Broadway. We have been positively crowded out of our formerly convenient banking rooms at No. 40 Wall street by the growth of this JOURNAL, requiring space for our editors and *employés*, and for models, samples of apparatus, patents, &c., &c., which have gradually accumulated about us. And we here invite cordially to our Rooms all officers of gas and water-works, and others visiting the city on business connected with either of our *specialités*. They will find desks and portfolios entirely at their services, and by causing their letters to be addressed to our care, and calling for any other conveniences that we may forget to provide, they cannot fail, with our right hearty welcome, to feel at home in this, perhaps wicked, but slightly fascinating, metropolis.

Our next number will contain an engraving of the new establishment, with a brief sketch of its arrangements. We have just remembered that some of our English friends have advised us of their intended visit to us in the spring, and they, too, had better cause their letters to be addressed to the "Rooms of the AMERICAN GAS-LIGHT JOURNAL, New York City," which will ensure their prompt delivery. We shall be glad to see them.

The report upon Dr. Cresson's Cellular Retorts will repay perusal. They are also advertised to-day on the last page.

This reminds us to call attention to the new style of advertisements which we have been compelled to adopt, lest we be driven to issue the JOURNAL by the ream instead of the sheet. The new plan is effective, comprehensive, and cheap. The system of monopolizing whole pages is wasteful in money and in space; we therefore prefer to represent large numbers at a small cost to each, rather than a few at a high, and, in some cases, inconvenient cost. We belong to the people, and wish to have them around us in the mass.

At an impromptu entertainment given by a few engineers of the gas-persuasion to one of their fraternity lately returned from abroad, we are told the success of the AMERICAN GAS-LIGHT JOURNAL and the health of its proprietor were drunk with "three times three, a Boston tiger, and a silent Josh," with sundry complimentary prefaces, all very gratifying, so far as they go. A full bench of clay retorts was set, and an enormous amount of gas carbonized and drawn off without the aid of exhausters. So says a facetious informant, whose veracity is past question.

We have had the curiosity to cause an account to be taken of the correspondence involved in the six months' existence of the AMERICAN GAS-LIGHT JOURNAL, and find it to reach the following figures, which are rather within than beyond the limits of accuracy:

Letters, reports, and memoranda written in June 1859, in preparing the Tables for the first number - - -	452	
Reports received, transcribed, and compared - - - - - - - - - -	510	
		962
Letters received from July 1 to Dec. 30, 1859, on business connected with the Journal - - - - - - - - - -	1,046	
Do., written; domestic and foreign - -	1,418	
		2,464
Subsequent reports, with full particulars, names of officers, &c. &c., examined and transcribed - - - - - - - - - - -		472
Incidental memoranda, notes, &c. &c. for explanations, written in six months, say - -		300
		4,198

Besides these four thousand manuscripts, which have been either written, or what is quite as laborious, read, digested, and partially transcribed, the same hand and head that performed that task and pens this paragraph, has attended to the details of the Journal—preparing it for publication, &c., and further, has conducted the entire correspondence of our banking business (excepting the collection department), averaging a receipt of 300 letters per month; and attended personally to the current duties of the office and to the incessant calls of visitors, with many of whom conversation of some length was unavoidable. Our correspondents will bear witness, too, with what promptness their favors have been answered. Indeed, we are not aware of a single letter having remained unanswered over one mail after its receipt, unless for the purpose of procuring information. We cannot help the remark, that if every one had been as anxious to please us, there would not have been a blank in our tables on their first publication. They are still incomplete.

The Metropolitan Gas Company has opened an office at No. 402 Fourth Av., New York. No further steps have been taken by them that we hear of.

There are promises of a large increase of gas-works in the spring, preparatory to which our advertisers are, as a general thing, quite busy with their designs, casting, and manufacturing apparatus. The demand for coals is on the increase, and a large depôt of English gas-coals has been recently established in this city by one of our enterprising clients.

One or two new English advertisements appear in our columns to-day. We hear of one order for 1,000 clay retorts and 106,000 feet of gas-pipe given to two of our advertisers by an extensive gas-works.

The tables of the German gas companies are prepared, but crowded out until next month, when we shall dispense with publishing the names of the officers of the American gas companies, and thus gain some valuable space. These latter tables are, we believe and hope, correct, as far as they go. They include

334 American companies - - - -	$46,131,830
18 companies in British provinces -	1,943,000
17 Cuban, Mexican, & So. Am. Cos. -	5,400,000
369 companies. Aggregate capital -	$53,474,830

We have received a long and interesting letter from our old friend Hon. Townsend Harris, U. S. Resident Minister at Yedo, Japan; but as there is no "gas" lurking in it, we await another, which will, it is hoped, tell us something of the mode of lighting-up adopted by his coppery neighbours.

The publication of our gas-meter check-book is delayed until February, that we may avail ourselves of suggestions that will greatly improve it.

We have received full supplies, and are now prepared to fill all orders, for Clegg, third edition.

"Glenmore" favors us with an interesting article on the motion of gases; and we are authorized to promise our readers regular communications hereafter from this able source.

We infer from Mr. Courtenay's communication, that he intends constructing an exhauster compensator, with a valve-seat four inches in diameter. If so, he will probably be disappointed in its practical working.

The object of the compensator is to pass large quantities of gas in short periods of time. The larger the valve-seat and the inlet and outlet pipes, the more sensitive will be its working. Should he make the compensator conducting-pipes of the same diameter as his gas-main, he will have a by-pass of the best description.

For the passage of gas through an "orifice in a thin plate" into a medium whose tension is that of the mean atmospheric pressure, we may use the following formula:

$$Q = 777\, d^2 \sqrt{\frac{h}{}};$$

in which the discharging gas is assumed to have a mean temperature of 62° Fah.; the notation as above.

Mr. Courtenay will find an elaborate exposition of the subject on which he writes in Clegg's Treatise, third edition.

NOWLAN'S GAS-EXHAUSTER.—We have just discovered that the engraving of Nowlan's Gas-Exhauster is wrongly set on page 128. The cut should be reversed—the pipe near which the belt is attached being the outlet, and the other the inlet.

OPENING OF THE GREAT NATIONAL GAS WORKS.

THE business of letting on the gas from the Grand National Gas-Holder was commenced on Monday, December 5th, at twelve o'clock, M., when nearly all of the sixty-six greater and two hundred and thirty-seven lesser pipes were "set." The arrangement of this institution is decidedly unique: it is, in fact, *sui generis*. The shape and dimensions of the establishment are as follows: The ancient edifice consists of a circular centre building and two wings, together about one hundred and twenty feet deep by three hundred and fifty feet long, to which additions are being made, as required.

The *Centre-seal* is ninety-six feet in diameter by one hundred feet in height, crowned by a dome or telescopic pope's-head, one hundred and forty-five feet from the ground, to hold extraordinary ebullitions of the lighter and more volatile gases from the lower ducts.

The precise situation of this mammoth gas holder is at the end of a village called Washington, in the District of Columbia, on the east branch of the Potomac River, and seventy-two feet above tide water, full of "magnificent distances," and not much else.

The supply of gas into this vast reservoir comes through sixty-six *mains* of about fifteen inches diameter each, called *Senators*, which conduct the subtile fluid, two from each of the thirty-three *Retort-Houses*, situated in the respective capitals of these United States. These thirty-three pairs of mains are not parallel in all cases: some are tortuous in their progress to the great centre, while many cross each other abruptly at sharp angles, although emanating from the same sources.

There are also two hundred and thirty-seven *service-pipes*, called *Representatives*, which receive the lighter gases from an almost infinite number of still more diminutive branches, reckoned by some to be as many as thirty millions in number, vulgarly called "*peoples*," to designate their insignificance in comparison with the greater *bores* which emanate from them.

The chemical properties of the gas evolved by these three hundred and three mains or service-pipes vary from several causes. The volume and quality of the gas is likewise unreliable. Sometimes it is full, luminous, and explosive, especially fatal to foreigners, Englishmen in particular—that is called *patriotic* gas. At other times it is thin, volatile, inodorous, and harmless, and escapes without offending the nose or ear—that is termed *buncombe*. Then, again, it is highly charged with ammonia or sulphuretted-African, a cross between the western pole-cat and irish-tom, and goes in bursting, rearing, tearing, rushing, whirl-windish sort of gusts, sweeping away in its course all political and fraternal land-marks, covering the opposition benches with a blackish sort of "fur," and the Administration seats with a lighter deposit termed "glory." This gas is called *sectional*.

It is this latter description of gas that has been let off since the opening of the great Holder, having been generated during the summer months in various parts of the country, at the local gas-works, by a species of stokers called *politicians*.

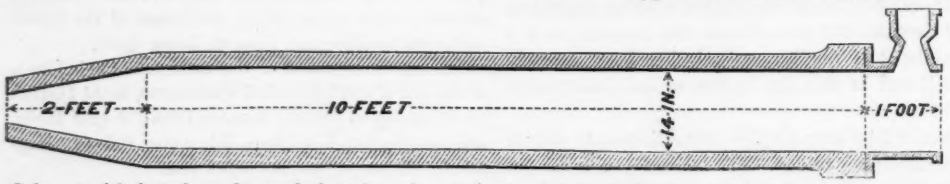
The smell from this gas is now suffocating the Union. We hope that in mercy some of the gas-men of Washington will vary the *charges* of their local retorts, and give us a different flavor during the remainder of the session. We can stand anything but what we are getting, as the Dutchman said after tasting the coffee made of roasted peanuts, "give us de other ting, whatever he be."

As to light, very little, if any, is emitted by either of these gases. An ordinary *Scotch-tip* will do more towards illuminating a whole city like New York than these 303 bores, big and little, can do for the rooms they meet in, and, next to Hart's patent economizer, which is an admirable low-pressure burner, we would advise the immediate application of an Executive stop-cock to *put them all out*.

DECARBONIZING OR OPEN-ENDED RETORTS.

Sir,—The premature notice that appeared in your columns on "Open-ended Retorts" has to some extent anticipated the purport of this communication, and necessitated its re-arrangement from the form in which it was originally written (it being in course of preparation when the notice referred to appeared.) Had my notice been so fortunate as to have had the precedence, it would have distinguished this form of retort by the name of "The Decarbonizing Retort," thereby indicating the object of its peculiar form, and the results desired; and I would still desire to retain this significant name if you and your readers would favor its adoption.

Of the origin of this form of retort, little requires to be said, further than having, like my brethren in the profession, been using clay retorts, and working them at a high temperature, I experienced with them the inconvenience attending upon the deposit of carbon on the interior. This source of annoyance had a double character—first, by its seriously abridging the working capacity of the retort, and secondly, in the time lost by the process employed for its removal, and to the serious injury of the retort; weeks elapsing on some occasions before it was again restored to good working condition. About four years ago I entered upon some experiments in order to find some means of diminishing the annoyance by keeping the carbon subdued in quantity. The first of these consisted in having a retort-door or lid cast with an arc cut off from the top, and also a hole close to the bottom or other side, of such size as to receive a three-and-a-half inch pipe. The object of this arrangement was, by thrusting the end of the pipe up to the carbon, and allowing a current of air to play upon it, the carbon would thereby be decomposed, the resultant gases escaping by the aperture at the top of the door. This plan was only about two hours in operation when the pipe became so softened by the heat as to collapse, and consequently bring the experiment to a close. The same experiment was repeated, substituting clay for the iron pipe, which wrought well, but on removing the pipes they fell to pieces, and could never be used a second time.



I do not wish it to be understood that there is anything new in the application of air for the removal of carbon,—if I did, the thousand-and-one ways it has been applied to this end would be evidence to the contrary. But though there is nothing new, neither in the element applied nor the end attained, there is a novel simplicity in this mode of application which constitutes its peculiarity, and it is that property which commended its adoption to those companies which have them now in use. In large gas-works, where they have the advantage of exhausters, abundance of laborers, and a command of relays of retorts, the source of annoyance referred to may not have been so troublesome, and therefore makes this device the less important; but in provincial and small country works, where no exhausters are used, with laborers only equal to the daily task, and a limited margin of retort power, its adoption will confer the greatest advantage by maintaining the retorts at their original dimensions.

The form and dimensions of the retort used by me for nearly the last four years are shown in the above illustration:—The body is ten feet long by fourteen inches diameter; to the back end is fitted a conical piece of clay or iron two feet long, and tapering to a six-inch hole in the centre, fitted with a cover. The hole is therefore in the *axis* of the retort—a necessary condition in its construction. The front mouth-piece is of the usual description, but has one of the ordinary working doors or lids, cast with an arc, cut off from the upper part, as shown above in Fig. 2. This arc is of a size to leave a clear opening into the retort of about three and a half inches deep. In this brief description is contained the full detail of the retort and its appurtenances; all the difference between it and an ordinary retort is required in the setting in the oven, the cone being built into the usual solid brick-work at the rear, with the end projecting an inch or two beyond the face of the wall. To illustrate the action of the retort, suppose that after some time working the carbon was becoming inconvenient, all that is necessary to be done is to draw out two-thirds of the charge, leaving one-third to cover the bottom of the retort for protection, and also by its combustion to increase the heat of the carbon to be acted upon by the oxygen of the atmosphere; take off the small cover from the cone behind; place the door on the front with the cut portion to the top, and the process of decarbonizing immediately begins; the current entering by the hole in the cone, sweeping the roof of the retort, and escaping by the hole in the lid on the front. The current is established in this direction from back to front; being a *little higher* than the hole in the rear, it therefore escapes at this point. Suppose that the current had operated in this direction until all the carbon was removed from the rear half of the retort, that it was still unacted upon over the front half, but that its longer continued action in this direction would only tend to make the retort leaky, by abstracting the permeated carbon from the fissures of the retort, all that requires to be done is simply to turn the door on the front upside down (the cut side to the bottom), and immediateiy the current is reversed, simply by the same law that established it in the opposite direction; but the opening in the front being now a *little lower* than the hole in the rear, the air enters by the front and escapes at the rear, accomplishing for the front of the retort what the first current did for the back. The current will continue in either direction so long as the above conditions are observed, with as much warmth in the retort as will rarefy the air in the interior. But it must be kept in mind that the higher the temperature of the retort, the more rapid will the current be; and so also will the carbon be the more speedily removed—an abundant supply of air and a high temperature being indispensable for its decomposition.

The fact of my having used this form of retort for nearly four years, without bringing it as a novelty before the public, will screen me from the charge of egotism, if I speak warmly of the device. While I would recommend its adoption wherever it can be conveniently done, I do so both from a larger and, by being its originator, from a longer experience than could be professed in the first notice which appeared. The convenience and economy attending its use I find to be important. By this plan a few hours to spare can be turned to good account by opening for decarbonizing; and so little time is required for opening and closing, that advantage can be taken of *one single hour*. During the years I have used them, I have not lost a single cubic inch of their working capacity, nor an hour by standing to burn out. Besides, in requirng no attention while standing open, the process of "decarbonizing" goes on noiselessly and efficiently during the workman's absence, in one night denuding the retort of a month's accumulation of carbon. So energetically does the air act upon the carbon when it has a large surface, that one atom of oxygen takes up only one atom of carbon, escaping as carbonic oxide, and taking up the other atom of oxygen while under combustion. The object of the device was, to have such an arrangement as could be easily managed in small works, where there is only one man in attendance at a time, thereby enabling such works to adopt clay retorts, and enjoy advantages hitherto only in the possession of those of greater extent. In several such works they are now in use, and perhaps in some future issues of your Journal they may give their experience.

If any of your readers consider this communication worthy of further inquiry, I shall be glad to aid it in any form. To reciprocate aid is my earnest wish, as, in doing so, I have always found myself the debtor, and I would most anxiously increase that debt.

John Young.

Gas-Works, Dalkeith, Scotland, Nov. 15, 1859.

Sir,—In reference to a letter headed "Open-ended Retorts," which appeared in the last number of your valuable Journal, and signed by Mr. John Young, Gas-Works, Dalkeith, in which an attempt is made to charge me with a desire to claim the invention of the open-ended retort, I have only to state distinctly that no man knows better than Mr. Young that I never did, nor ever had the least intention of doing any such thing; and no man knows better than he does that I never recognized his claim to be the inventor of the open-ended retort.

James Robb.

Gas-Works, Haddington, England, Nov. 10, 1859.

The self-evident advantages of the open-ended retorts are sufficient to repay our readers a perusal of the foregoing letter although it be rather long.—Ed.

Reduction in the Price of Gas.—At a meeting of the Directors of the Syracuse (N. Y.) Gas-Light Company held December 10th, 1859,

On motion of Mr. Leavenworth—

Resolved, That in conformity to the terms of our memorial to the Common Council, under date of 22d day of August last, from and after the 31st day of December instant, the price of gas be reduced from $3 50 per 1000 feet to $3 00 net, *provided* the same shall be punctually paid for according to the rules and regulations of the company; but otherwise the price shall be invariably $3 15.

On motion of Mr. Lynch—

Resolved, That the time for the payment of gas bills be and the same is hereby extended from *five* days to *ten* days from the delivery of the bills, and that this change be noted on the bills from this time.

Moses D. Burnet, Pres't.

Allen Munroe, Sec'y.

ANSWERS TO CORRESPONDENTS.

O. D., of N. Y.—*Samuel Hughes, C. E., author of the Treatise on Gas-works, is the person to whom you allude as agitating the reduction of price of lighting the public lamps in London. It is impossible for us to judge of the merits of the dispute, it being entirely local, and, perhaps, somewhat personal.*

L. E. L., of N. Y.—*According to Mr. Clegg's statement of six experiments of the flow of gas from a 6-inch main, with a pressure equal to half an inch of water the result was as follows:*

Length of pipe, in yards.	Cubic ft. disch'd. per hour.	Value of x, calculated from the equation $x = \frac{Q\sqrt{g}}{D^2\sqrt{H}}$
3.46	44.280	2.100
4.05	38.838	2.100
7.05	30.000	2.096
16.05	20.270	2.099
25.	16.460	2.099
34.02	14.080	2.100
		6)12.594
The co-efficient derived from Mr. Clegg's experiments on a 6-inch main . .		2.099

S. T. & D., of O.—*The chimneys of English retort houses are usually from* 80 *to* 100 *feet in height. This should depend on the proximity of your works to the populated parts of the town. The question of draft depends very much on other things.*

B. D. C., of Me.—*Drain pipes should be selected, as to diameter, in reference to the extent of service required of them. Be careful to get the iron-clay, vitrified, and of too large, rather than too small, bore.*

S. & G., of R. I.—*The remittance was received; the postage stamps sticking fast and flat to the wetted paper; consequently worthless.*

J. P. C. of Va.—*Every* 6*lb. of carbon requires* 16*lb. of oxygen, which contains about* 900 *cubic feet of atmospheric air, at ordinary temperature.*

Engineer, of Mass.—*The English gas companies state* 10,000 *cubic feet of gas to be produced from each ton of bituminous coal, requiring* 100,000 *cubic feet of air; adding to which the* 240,000 *cubic feet required for the coke, there is the gross value of* 340,000 *cubic feet required for the combustion of each ton of coal.*

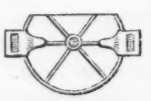


Fig. 2

W. & T. P., of Conn.—*The paper to which you refer respecting the hydro-carbon gas, was read by Mr. C. B. Mansfield, in* 1850, *before the Institution of Civil Engineers in London. The system was merely the conducting a stream of any gas, or even air, through a reservoir charged with benzole, or some other volatile hydro-carbon. A small gas-holder, filled by a pair of bellows, supplied the air. By decomposing water with the voltaic battery, naphthalizing the hydrogen with benzole, and burning it with the aid of the equivalently freed oxygen, a light of intense power is obtained. Hill's system is more air than gas, and it is up-hill work to make it burn—so we hear. You had better stick to coal until it gives out; then turn on the water.*

Alpha, of O.—*Thank you for nothing. It is in the Tables already. Send the other documents.*

K. & D., of Pa—*Clegg is* $10 *a copy. This is much cheaper than it used to be; and, like all English works, it is well printed, and well bound.*

Ozone, of Cal.—*You did quite right. The Journals were at your service, and we know you have served us.*

B. L. D., of N. Y.—*The particulars are quite interesting, but smell strongly of an advertisement. On that basis they can go in, at our regular rates.*

STATISTICS OF GERMAN GAS-WORKS.

The next number of the American Gas-Light Journal will contain the complete and interesting Tables of German Gas-works, prepared by the Director-General of the German Continental Gas-Light Association and others.

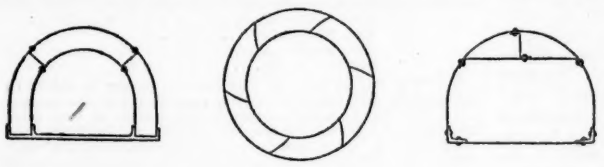
Public attention is called to the report of the suit brought by the St. Nicholas Hotel against the Croton Aqueduct Department. A more righteous judgment was never passed by a Court; and the consumption of water by this one hotel is fearful to contemplate, when we reflect upon the other serious drains to which the supply of water is exposed. The necessity of meters for ascertaining the consumption of water, and securing a proper compensation for it, is made more apparent by the developments consequent upon this trial.

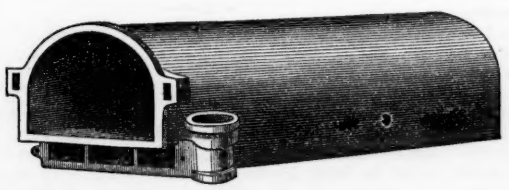
The result of the suit against the Manhattan Gas-Light Company is a proper rebuke to an attempt to extort money from a corporation, whose voluntary offers of compensation more than covered the damage it had occasioned the plaintiff.

CRESSON'S CELLULAR GAS RETORT.

The Committee on Science and the Arts constituted by the Franklin Institute of the State of Pennsylvania, for the promotion of the Mechanic Arts, to whom was referred for examination the Cellular Gas Retorts, invented by Dr. Charles M. Cresson, of Philadelphia, Penn., report:

That the invention consists in arranging a system of cells in the walls, and especially in the bottoms, of the retorts, which cells are so connected, by omitting the dividing walls alternately at the two ends, as to constitute a continuous passage, opening at one end into the retort, and at the other giving exit to the gas into the main. In this way the gas is maintained for a considerable time at a moderate red heat while it slowly traverses this passage. In the retorts in use at the Philadelphia Gas-Works, the cells are in the bottoms of the retorts only, and are eight in number in each retort, each two inches wide, four inches deep, and six feet long; so that the gas is made to traverse slowly a space of 48 feet, and during the time thus occupied, is subjected to a regulated and moderate temperature.





The effect of such an arrangement is two-fold: In the first place, it must modify, to a considerable extent, the temperature of the body of the retort itself, which has thus interposed between it and the heat of the furnace-flues, the gases contained in the cells. The retorts will thus be less violently and more steadily heated, and the nature of the gases developed, may, as is well known, be thus considerably modified.

Secondly, it would seem possible that a material change in the chemical nature of the gases may be produced by the maintenance of this temperature for a considerable time.

Heretofore, these retorts have been exclusively employed in the manufacture of gas from wood, and the practical result has been that, whereas, according to the experience of the gas-works in the city of New York, the gas from wood manufactured in the ordinary retort cannot be economically used, owing to its low illuminating power; the gas from wood manufactured in this city in the cellular retort, exhibits at the present prices of wood and coal, a slight superiority in economical value over coal-gas. The wood used has been principally common pine, and, as the apparatus has been used merely as an adjunct to the coal-works, and is comparatively on a small scale, no provision has been made for properly seasoning, drying, or splitting the wood. For the most part the wood had been distilled in large sticks, dried for a few hours only, and requiring some four hours to exhaust the volatile matters. Experiment, however, has shown that the capacity of the apparatus can be largely increased by diminishing the diameter of the wood, and by thorough drying. By proper attention to these points, the same weight of charge can be burned off in 1½ hours with an increased yield of gas per pound. In this way, a retort that will yield ordinarily 4,500 cubic feet of gas in 24 hours, can be made to produce over 9,000 cubic feet in the same time. By careful working, 10,000 cubic feet have been obtained with the same amount of fuel and labor as are ordinarily used for two-thirds that amount of coal-gas.

The following are the statements of the results actually obtained with these retorts:—

EXPERIMENTAL TRIALS.

April 29 and 30, 1856. Six retorts in action—duration of trial 48 hours.
Large pine wood—three hours charges.
14,400 pounds of wood produced 76,000 cubic feet of gas.
Being 5.27 cubic feet to pound, or 15,800 cubic feet to cord. 6,333 cubic feet to retort in 24 hours.

June 12 and 13, 1856. Six retorts—3 hours charges—duration of trial 48 hours.
Pine wood split and partially dried.
12,000 pounds of wood produced 76,000 cubic feet of gas.
Being 6.33 cubic feet to pound, or 18,900 cubic feet to cord.

July 31, 1856. Six retorts—hourly charges.
Pine wood, split small, and dried.
14,400 pounds produced 62,000 cubic feet of gas.
Being 4.30 cubic feet to pound, or 12,900 cubic feet to cord.

In this trial the charges were not thoroughly burned off—the charcoal being smaller but of better quality.
10,333 cubic feet to retort in 24 hours.

March 1, 1855, to March 1, 1856.

Wood used in retorts.	Gas produced.
2,896,578 lbs.	11,860,425 cubic feet.

Fuel used, (coke exclusively.) 33,906 bushels.
Average make per pound for year, 4.09 cubic ft. equal to 12,200 cubic feet per cord.
Maximum monthly make = 4.83 cub. ft. per lb. equal to 14,490 cubic feet to cord.
350 cubic feet of gas were produced for each bushel of coke used as fuel.

March 1, 1856, to March 1, 1857.

Wood used in retorts.	Gas produced.
1,840,265 lbs.	8,306,000 cubic feet.

Fuel used, (wood exclusively.) 1,380,000 lbs.
Average make per pound for year, 4.51 cubic ft. equal to 13,530 cubic feet per cord.
Maximum monthly make, 5.61 cub. ft. per lb. equal to 16,830 cubic feet per cord.
Average charge 137 pounds per retort.
Average retorts in action, 6.
Yearly production per retort 1,384,-333 cubic ft.
Average duration of retorts, 12 months.
18,000 cubic feet of gas produced per cord of wood as fuel.

As every invention by which the price of gas is diminished, either by increasing the yield, by diminishing the first cost of the apparatus, or the expense of its maintenance, or by substituting other materials for those which have been heretofore exclusively used in its manufacture, is of the greatest importance to the community, the committee deem the gas retorts of Dr. Cresson to be a very valuable improvement, and recommend them to the attention of those engaged in the manufacture of illuminating gas.

By order of the Committee,
William Hamilton, Actuary.

Philadelphia, June 11th, 1857.

GAS-LIGHT IN BELGIUM.

REPORT ON THE MEASUREMENT OF GAS, BY THE MINISTER OF THE INTERIOR TO HIS MAJESTY THE KING OF THE BELGIANS, AND DECREE ISSUED THEREUPON BY HIS MAJESTY.

Report to His Majesty the King.

Brussels, May 10, 1859.

Sire,—In Belgium, at the present day, lighting gas forms a very important item of consumption, as may be inferred from the number of places in the kingdom which are already lighted in this manner. To say nothing of the capital and suburbs, there are about twenty other towns and communities at present enjoying the advantages of this system of lighting.

With these facts before it, the Government has thought it to be its duty to examine in what manner the distribution of the gas is effected; and whether the interests of the numerous consumers of this article require any protective enactments.

Gas-lighting is generally effected by means of *concession*. At first, the "concessionaires" received from the consumers a certain payment, calculated from the duration of the lighting, the size of the flame, and the number of burners employed. But transactions conducted upon such principlies were attended with many disadvantages; and although this method is still observed to a great extent in public lighting, gas is now almost universally delivered by *measure* for private consumption.

The measurement is effected by means of an apparatus, of English invention, called a "meter." This apparatus, which is fixed at the residence of the consumer, indicates, by means of certain mechanical arrangements, the total quantity of gas delivered for consumption within a given time.

The greater number of the meters now in use are obtained from Germany, and they give the measure in English feet. The Continental Company, which supplies the principal towns in this country, furnishes no others to the subscribers. The consequence is, firstly, that only very few persons are able to verify the accounts of consumption prepared periodically by the company's agents. Besides, the meters are under no control, and so complaints are not unfrequently heard; and it is generally desired that the Government should interfere to remedy this state of things.

It has been said, with reason, that the meter is the sole witness of the debt owing by the consumer to the manufacturer; it is, therefore, very desirable that it should speak a language which may be understood by both parties concerned, and the only measures known in our country are those of the metrical system.

The meters should express in metrical measure the quantity of gas delivered for consumption; and, moreover, as these machines are really instruments of measure, they ought to be subjected, like ordinary measures, to the conditions of regularity and correctness.

I have, therefore, Sire, the honor of submitting for your Majesty's approbation the draught of a decree, the object of which is to declare the law of 1st October, 1855, respecting weights and measures, to be applicable to the apparatus herein referred to.

(Signed) The Minister of the Interior, Ch. Rogier.

DECREE.

Leopold, King of the Belgians, to all present and to come, *Greeting:*

Whereas, the apparatus called meters, which are used in the distribution of gas, indicate by *measure* the quantity of gas delivered to consumers, and that these apparatus are, for this reason, instruments of measure which ought, as such, to be included in the category of lawful measures;

Whereas the arrangements required for this purpose have acquired a character of general interest from the development which the system of gas-lighting has attained in this country;

Having regard to the law of the 1st of October, 1855, with reference to weights and measures;

On the report of our Minister of the Interior,

We have decreed, and do decree, as follows:

Article 1. From and after the 1st of September, 1859, the law above quoted of the 1st of October, 1855, shall be applicable to gas-meters. Consequently, from the date above mentioned, these machines must be regulated according to the metrical system.

Article 2. The meters shall be tested and stamped before being sent out for use.

The testing will be especially directed to ascertain—

1. Whether the meter be of an improved system of construction, as will be detailed in Article 9, hereinafter given.

2. Whether it work with regularity and correctness.

In addition to the above, the machine may be subjected to any other tests whose utility may be proved by experience.

Article 3. In checking the working of the meters, the testers will pass over errors not exceeding *one per cent.* above or below the lawful measure.

Every meter whose indications do not vary beyond these limits shall be considered correct.

Moreover, it must not cause to the gas passing through it a loss of pressure exceeding a column of 1-10th of an inch.

Article 4. Every meter shall be furnished with a metal plate bearing the name or mark of the manufacturer, the number of the meter, the number of burners it is calculated to supply, and the year of its manufacture.

Article 5. The first testing and the stamping of the meters shall be performed at the establishment of the person who manufactures or furnishes those machines.

For this purpose, the manufacturer or contractor shall hold at the disposal of the Government Inspectors of Weights and Measures a laboratory furnished with the necessary apparatus.

This laboratory shall contain, necessarily, a gasometer capable of containing from 10 to 15 cubic feet, and a special meter, called a regulator.

The correctness of this apparatus shall be testsd by the Inspector of Weights and Measures, who shall thereupon affix the Government stamp thereto.

Article 6. The company or establishment supplying the gas may, as often as it deems necessary, demand the re-testing of any meter in actual use. The subscriber will enjoy the same privilege. This re-testing shall be performed either in the presence or absence of the parties. It may be performed at the residence of the subscriber, by means of a regulating-meter duly stamped.

Article 7. By analogy with Article 2 of our decree of October 4, 1855, concerning the *domiciliary* testing of instruments of weight and measure, there shall be paid the tester, as a remuneration for his displacements, a fee of 5 centimes per burner for every meter to be tested: provided that the whole amount of fees payable on each visit be not less than 2 francs nor more than 6 francs.

Article 8. Every meter which shall have undergone repairs must be stamped afresh, for which no fee will be required.

Article 9. Before proceeding with any other test, the system of construction of the meters shall be submitted to the examination of the Special Commission of Weights and Measures appointed by the ministerial decree of the 23d of May, 1856. On their report, the Minister of the Interior will decide if they be entitled to be approved.

Article 10. Any person desirous of procuring the approbation of any particular description of meter, shall address a petition for that purpose to our Minister of the Interior, setting forth—

1. Whether the meter be patented, or not.

2. Whether it be already in use in other localities.

3. The place where the meter will be subjected to trial, and where it may be tested.

A detailed and intelligible explanation of the construction and working of the meter must accompany every application of approval.

Article 11. The foregoing arrangements do not apply to meters in actual use. These may continue to be used until their removal and repair becomes necessary.

Article 12. The superintendence of the testing and the stamping of the meters is confided to the care of the local authorities.

Article 13. Our Minister of the Interior is charged with the execution of the present decree.

Given at Laeken, May 23, 1859.

By order of the King, (Signed) Leopold.
The Minister of the Interior, Ch. Rogier.

For the American Gas-Light Journal.

CONDENSATION.

It is only of late years that condensation has occupied its proper rank among the processes of gas making. The earlier history of this branch of engineering evidences little appreciation of the necessity of complete condensing (or refrigerating) appliances—little acquiescence in the axiom, "thorough condensation is the half of purification." Proof of this strange indifference may be found in not a few gas works of over ten years' age, and even in more recent works erected under the auspices of men whose experience has been insufficient to lead to a recognition of the true mode of treatment appropriate to coal gas in its recent state.

Gas is considered to be at its standard volume at 60° Fahrenheit, and 30 inches Barometer, and yet it is fair matter for doubt whether one in twenty of our engineers considers the temperature at which it is registered, as an element in calculating his "unaccounted-for-gas." It is not the less the fact however, that air or gasses expand one four hundred and ninetieth of their bulk for the accession of every 1° above 33° Fahrenheit. If, then, one engineer has a temperature at the station meter inlet of 60°, his apparent loss will, *cæteris paribus*, be four per cent. less than that of one, the faulty construction of whose works influences a registering temperature of 80°. In the celebrated arbitration between Mr. Croll and the great Central Gas Consumers' Company, of London, much stress was laid upon this question, and the report of proceedings thereon embodies the practical testimony of able engineers as to it. And while thus digressing it may be added, that in other details of construction and practice this report is a very mine of information to the careful and patient reader, who may obtain it, I believe, at the office of the American Gas-Light Journal.

We find in American gas-works occasional instances of the multitubular condenser; of one in which the vertical pipes are flattened passages of boiler iron; and of Kirkham's Annular Condenser. Each of these aims at a large surface of condensation relatively to the cross-section of the column of gas, and the last has met with most substantial improvement at the hands of the late Alexander Wright, who, in his ventilating condenser has combined, in a degree previously unknown, perfect efficiency with ease of adjustment to the ever varying conditions of gas making. No lengthy allusion to this instrument is needed here, as a full description, and drawings of the mode by which air is applied to the interior of an annular column, and caused to traverse in an opposite direction to that pursued by the gas, as well as of the construction and action of the regulating hoods may be found in Clegg on Coal Gas, 3d edition, p. 183.

With few exceptions, however, our condensers consist simply of a system of upright cylindrical pipes, standing upon sealing-boxes, and suitably joined in pairs at top by return bends, which somewhat primitive arrangement may be rendered a very efficient one by the application of refrigerating jets of water to the exposed surfaces of the upright pipes. It is true, that in this way thorough action is had upon the exterior of the column of gas merely, yet marked benefit attends this application of water, owing to the cooling effect of evaporation, and the comparatively enormous capacity for heat which water possesses. (*a*.) The former consideration, in fact, renders this mode superior to immersion, and permits the gas to be cooled to a temperature lower than that of the atmosphere, a result unattainable by any mere "air" condenser.

And here may be given the following result of actual practice:

In a gas-work sending out 90,000 cubic feet of gas *per diem*, it was found that in spite of 456 feet run of 10-inch condensers, (*b*.) and five large jets of water in action in the washers, traces of tar occurred in the purifying boxes, the gasholder drips, and even in the street drips. The item of "unaccounted-for gas" also, was heavy. The condensers were in the open air, next to the hydraulic main, while the washers were interposed between the condensers and the dry-lime purifyers. The engineer attributed the above objectionable results to their true source, imperfect condensation, and at once gave instructions for fitting over each return bend a jet from which water was allowed to trickle down the exterior of the vertical condensing pipes. The immediate effect was to completely prevent the deposit of tar in the purifiers and drips, while a sensible and simultaneous depreciation in illuminating value, due to the excessive washing of the thoroughly condensed gas, was obviated by the disuse of three washer jets; two being found ample to accomplish what, under previous conditions had overtasked the original number. In addition to this, a diminution of two per cent. was noticed in "unaccounted-for-gas," owing to the fact that there was less difference between the temperatures at which the gas was registered respectively at the station, and the consumers' meters. The circumstance that no decrease in the yield of gas per ton was observed, was due to an accidental increase in the carbonizing power of the retorts, and in no way militates against the relation between volume and temperature, say one per cent. increase in volume for every five degrees increase in temperature. In aiming at thorough condensation, the fatal error of subjecting coal gas to a temperature below 45° must at the same time be guarded against: it is true, that the hydro-carbon vapors of Cannel-gas are of much lower specific gravities, and less easily precipitated by cold than those from Newcastle and other caking coals, but this fact should rather induce an increase of caution where the latter alone are used, than a relaxation of care where a varying percentage of the richer material is employed. (*c*.) To any one at all conversant with the practice of the larger companies, and with the difficulty which attends their efforts to supply gas of uniform quality, winter and summer, the sensitive nature of the hydro-carbons will be evident. We all know, that with equal percentages of Cannel, and uniform heats, gas, in winter (particularly in the northern States and Canada) compares unfavorably with the summer product, and on the other hand it is equally certain that the nearer gas can be kept to its normal temperature, both at the time of its entry into the dry-lime purifiers, and of its registration, the more advantageous and efficient are the subsequent and auxiliary processes to which it is subjected. How, then, is this desideratum to be attained? Surely not by adopting the erroneous principle of passing the nascent gas through a washer before its admission into the condensers, nor by expecting the washer, where properly interposed between the condensers and purifyers, to fulfil the half-performed functions of the condenser, as well as its own and only appropriate duty. The true *rationale* of these kindred stages of gas-making is to increase the efficiency of the condensers to the maximum point consistent with the preservation of the hydro-carbons, while the washer is employed merely to remove any excess of ammonia, its power to arrest any tar which may have escaped the condensers being a comparatively unimportant consideration.

A remark having been made, however, regarding the position of the washer which may be considered as heterodox, it may be well to define more particularly the considerations which serve to induce it. The only peculiar advantage of the washer is based upon the high affinity which subsists between water and the various ammoniacal gases. As an arrester of tarry vapors, or as a medium by which the gas is to be reduced to a temperature appropriate to the conditions of lime-purification, it is not to be compared to the simple and more efficient device of condensation.

And when water is directly applied prior to condensation, its almost instantaneous impregnation with tarry and ammoniacal vapors renders it powerless to retain the more subtle forms of ammonia, which at all times escape the condensers and lime purifiers. If a washer, in immediate juxtaposition to the hydraulic main, is to be rendered efficient for the removal of ammonia, such a quantity of water must be brought into immediate contact with the gas, as to tend very directly to the simultaneous absorption of the more permanent and valuable of the hydro-carbons; while, on the other hand, if the condensers receive the gas on its exit from the hydraulic main, and are provided with means for graduating their efficiency, no duty will be thrown upon the washer which it is incompetent to fulfil. When coal gas passes, at a temperature of say 50 deg., into the washer, it there encounters the mist which is reverberated from the "dash plates," and is so far stripped of its ammonia by the thorough application of a minimum quantity of water as a due regard to the stability of the hydro-carbons will warrant. The practice of passing gas through a *sheet* of water, in the so-called "box" washer, involves an error in principle, and sole reference is had in these remarks to the "jet washer," which, when working under a full head of water, assimilates somewhat closely, in principle and effect, to the "Gurney" jet. (Clegg on Coal Gas, 3d ed., p. 224.)

It should be observed, that the English engineers have been influenced in their condemnation of the washer, by their experience of the "box" washer, since, beyond a theoretical admission of the (to them) novel advantage of Mr. Gurney's suggestion, they have, so far as published, never adopted this more judicious mode of the application of water. (*d*.) Accordingly, we see in England the faulty process of "scrubbing" or the yet more pernicious use of acids, readily accepted, as offering superior advantages to those possessed by the washer; and it is is never forgotten that the presence of ammonia rather facilitates than embarrasses the action of lime in removing sulphur. While discussing the question of the variations of temperature, one of our most eminent engineers recently stated his conviction that a thermometer is as necessary as a pressure guage at every stage of gas-making, and the time is not far distant when his suggestion will have been acted upon by men who now perhaps consider it an unnecessary refinement.

Thermometers for ascertaining gas-temperatures are provided with a simple attachment, by which the bulb is immersed in the gas whose temperature is to be ascertained. (*e*.) The graduated tube is, however, left exposed to the external atmosphere, which fact will, of course influence a slight error in its record; but it may be questioned whether this error is of sufficient amount to counterbalance the advantages of simplicity which certainly attach to the instrument as at present made.

Whatever be the action of the condensers, a thermometer at their outlet furnishes little clue to the registering temperature. Chemical heat is generated in the Purifiers, causing an accession of about 10 deg., but if the temperature at the inlet to the centre-seal be considerably above that of the atmosphere, and if the purifying boxes be of large relative surface, and exposed to a free current of air, a contrary effect will be observable. The pipe which connects the purifiers and the station-meter may, if it be of considerable length, and removed from any undue influence, deliver the gas at a low temperature; or its proximity to the retort benches may cause it to act as a heater. A multitude of local causes, some of them remediable, and others not, serve to influence the temperature of gas as registered, from which fact a statement of that temperature should uniformly accompany every report of leakage accounts. J. R. S.

(*a*.) It is stated that a quantity of heat which will raise a cubic foot of water 1 deg. will cause a similar accession of temperature to 2,850 cubic feet of air or gas.

(*b*.) Affording 1,200 feet of condensing superficies. The rule laid down in Clegg advises 150 square feet for every 1,000 cubic feet of gas registered per hour, *where the stratum of gas does not exceed three inches in thickness.*

(*c*.) Mr. Lewis Thompson, of London, after most ingenious and able research, gives the following as the specific gravities of the hydro-carbon vapors, atmospheric air being unity:

From New Castle Caking	2.80 to 3.40
" Ince Hall Cannel	2.00
" Lesmahago..do	1.80
" Boghead.....do	1.22

(*d*.) Upon the question of the "box" washer, it should be stated that a series of photometrical experiments at the works of one of our largest interior companies, made eight or nine years ago, assigns a superiority of from 25 to 50 per cent. in illuminating value to the gas made from the "box," over that from the "jet" washe. This difference must have arisen from causes independent of the intrinsic merits of the respective forms of apparatus.

(*e*.) These thermometers can be procured at the Rooms of the American Gas-Light Journal.

For the American Gas-Light Journal.

COAL-TAR. ASPHALTE-CONCRETE.

Alleghany, Pa., Dec. 19th, 1859.

In the Journal for this month I see an article by H. W. Smith, of Seaham, England, on "Coal-Tar. Asphalte-Concrete." Deeming it of interest to Gas Companies to bring forward any facts which may tend to promote the sale of coal-tar, I send you the following remarks on the subject:

The pitch or asphaltum resulting from the boiling down or distillation of the gas-tar has not by itself enough body and tenacity to act as cement for conglomerating sand and gravel to make a good artificial stone, as the intervals between the particles or grains of sand being filled with pitch alone, the result is a coarse, open-grained concrete, without strength or solidity, and fit only for large blocks when used underground. If, however, a large percentage of aluminous clay and calcareous loam is stirred into the boiling pitch, it acquires, by cooling, a high degree of density. In 1853 I prepared in this manner some ornamental blocks which had the sonority of cast iron; and at the Pennsylvania Agricultural State Fair of that year I exhibited a Grecian fountain five feet in diameter, standing six feet high on a light pedestal, composed entirely of such blocks cemented together by the same material; the basin (some twelve feet in diameter) was made by laying on the bare ground a thin coat of the melted cement, in the same manner as the asphaltic sidewalks in Paris. I had on exhibition at the same time paving tiles, sewerage tiles, well-circle bricks, &c., and received a premium for them. In 1854 I obtained letters patent for this cement, which I called "Fusible Marble." You will see by these facts that in this country we have long been convinced of the value of coal-tar asphaltum in the production of artificial stone. In my process not only did I save the naphtha, but also the heavier oils, as I distilled the pitch to a proper degree for obtaining a concrete, which, when cold, could be ground, faced, and polished like marble.

W. P. Gengembre.

For the American Gas-Light Journal.

VALUE OF WOOD-GAS.

A cord of good pine-wood is equal to 1,113 lbs. of spermaceti; and by drying and splitting, gas, equal to 1,300 lbs. of spermaceti, has been produced, or nearly twice as much as is obtained from ordinary coals. As you have the prices of coal and wood in your city, you can easily make your deductions as to relative cost in your city.

With us it is in favor of wood-gas, considerably over ten per cent.

C. M. C.

Philadelphia, December, 1859.

Hart's Patent Gas-Burners.—Orders have come in from various parts of the United States for those excellent burners since their advertisement and notice in the December number of the American Gas-Light Journal. Among other applications is one from the United States Government for some of the public buildings. Uncle Sam shows his good sense in adopting our suggestion, for on most subjects he is hopelessly *in the dark*.

Water-Gas in Philadelphia.—The Northern Liberties Gas Company of Philadelphia are said to have purchased the right to manufacture water-gas from the patentees, and will light their district as soon as the retorts are ready.

WATER SUPPLY IN THE CITY OF NEW YORK.

In our August number we inserted a paper on the various schemes by which it was proposed to supply water to the city of New York. We now resume the subject, as we have received valuable information from various quarters, which cannot fail to interest our readers.

Our acknowledgments are especially due to the Croton Aqueduct Board, for various reports, and other documents. We have compiled from these papers a chronological account of the various methods proposed since the year 1774. At that date the corporations began to construct a well, with a reservoir, and other suitable works, in a central site, on the east side of Broadway, between Pearl and White streets. To raise the necessary capital, city notes were issued to the amount of two thousand five hundred pounds, and bonds were executed in favor of certain persons for land and materials to the amount of eight thousand eight hundred and fifty pounds more. The paper currency so created was known as Water Works money, and consisted of bills of various denominations, from sixpence to eight shillings each. In the month of August of the same year, an additional capital was in a similar way created to the amount of two thousand six hundred pounds. The works proceeded, and a spacious reservoir was constructed, but as the war of the Revolution broke out, and the city was occupied by British troops, the scheme, which was originated by an ingenious citizen named Christopher Colles, was abandoned. Ten years later, when the political confusion had subsided, Samuel Ogden made proposals to the Corporation for resuming operutions, and constructing suitable works. No action was taken, however, and a few months afterwards, in January, 1786, the Honcrables R. Livingston and John Lawrence made proposals to construct by private enterprise the necessary works. The Corporation approved their plans, and it appeared extremely probable that what the people ought to have long before done for themselves, would, by a lack of public spirit, be devolved on others. The good sense of the citizens however, prevented an outlay, which would probably have been injurious to the growth, salubrity, and general interests of the city. The endorsement of the Corporation was not enough. Before the scheme could be carried out, the vote of the people was taken, and the result was that the plan was defeated, and the opinion was found very generally to prevail that the privilege of supplying the city with water, ought not to be a monopoly, entrusted to private individuals, but should, if possible, be undertaken by the Corporation. As nothing further was done, and the want of water was seriously felt, the subject was once more agitated, and in January, 1788, a petition was presented by the people urging that the scheme of Mr. Colles should be adopted, or any other plan that the Corporation might deem more expedient, and it so happened, that a few months later the Rumseian Society of Philadelphia, opened negotiations with a view to supply New York with water, after the patent for Mr. Rumsey's engine should be perfected. This promising scheme, so opportunely offering, was immediately welcomed, and a resolution was passed by the Board, inviting proposals. No further movement, however, was made in the affair, and at the beginning of the year 1792, Zebrina Curtis and others, made various proposals, which were referred to a circumlocution office called the Street Committee, after which nothing more was heard of them, and three years elapsed, before the agitation was renewed. The inhabitants of the city were rapidly increasing in numbers, wealth, and commercial importance, and great inconveniences resulted from the inadequate supply of water. The few old wells scattered in various parts of the city were amply sufficient for the ten thousand inhabitants it had contained in 1756, but were complained of as very inadequate now that the population had increased fourfold. Accordingly, much popular feeling was awakened, and in March, 1795, proposals were made by various citizens, who were anxious to supply a want so universally felt; and amongst other plans, that of Samuel Crane, who offered to lay pipes along Roosevelt street, from the celebrated Tea Water pump, near Chatham Square. These projects were all of them, for various reasons, discarded, and as the agitation on the subject continued, a committee of the Common Council was directed in February, 1796, to advertise, and Joseph Brown, and associates, proposed to supply the city by means of pipes. In the following year, sealed propasals, for distributing water by means of pipes, were again advertised for, and among the various applications received, was one from the same Christopher Colles, who had undertaken the work twenty-three years before. All these plans followed the fate of their predecessors, and were consigned to the care of a committee, from whose guardianship they never emerged.

One great defect common to all the projects we have mentioned, was the inadequacy of the sources relied on. Dr. Joseph Brown was the first to meet this difficulty by a definite remedy. In the year 1798, in a communication to the Common Council, he pointed out the necessity of seeking water from sources outside the limits of the city, and recommended the Bronx River as affording an available and ample supply.

A committee of the Common Council reported favorably, and recommended an investigation. They also proposed that an application should be made to the Legislature for an act investing the Corporation with the requisite powers, and granting them the proceeds of the tax on auction-sales, that by these funds, or by loans founded on them, the necessary capital might be raised. Mr. William Weston, a civil engineer, was appointed to survey the ground, and report on the project. His opinion was favorable; but his information seems to have been confined to the knowledge gained by walking over, and viewing the ground.

As no definite steps were taken, and no other plan seemed feasible, the Manhattan Company, within a few weeks after Mr. Weston's report, was incorporated by an act of the Legislature, and entrusted by charter with the task of supplying the city. As the population, during the last ten years, had almost doubled itself, and amounted to more than sixty thousand persons, with a probability of further increase in a similar ratio, the company were privileged to go over the whole island of New York, and into Westchester county, to seek for good water. Although the nature of the subjacent strata forbade the hope of obtaining good water except from very deep levels, they contented themselves with sinking a large well at the corner of Duane and Cross streets, and the inferior supplies thus obtained were distributed by means of wooden pipes. These arrangements were unsatisfactory to a number of the citizens, and, in 1804, under the mayoralty of De Witt Clinton,—the inhabitants numbering now seventy thousand persons,—a committee was appointed to report on the practicability of supplying the city with purer and more wholesome water, and to confer with the Manhattan Company as to the terms upon which they would cede to the Corporation their works, and their privileges. There is no record of the results of this conference, and the inconvenience of permitting private speculation to withdraw from the hands of the city authorities the right of water-supply, was realized just as had been anticipated, when, in 1786, the city, by a very large vote, refused to ratify a similar project. The Manhattan Company owed its incorporation to the persistent exertions of Aaron Burr, at that time a member of the Legislature, and was not only invested with the rights we have mentioned, but possessed also the privilege of using its surplus capital in banking. The act of incorporation being obtained, the consent of the city was secured, by permission to subscribe for two thousand shares of the stock. As might have been anticipated, banking, which was the most lucrative, soon became the principal object of the company. Hence the lack of enterprise and efficiency in its functions of water-supply, out of which sprang the complaints and dissatisfaction to which we have referred.

Millions of dollars were probably, however, saved, and much disappointment and inconvenience prevented by the act of incorporation obtained for the Manhattan Company by Aaron Burr; for it is highly probable that but for the adoption of this course, the Bronx River project, or one equally costly and inefficient, would have been substituted.

Various causes contributed, during the next twelve years, to check further agitation on this subject. After the close of the war with Great Britain, however, the question once more began to attract attention, and, in 1816, the population having increased to one hundred thousand, the prevailing anxiety caused the appointment of a committee to report on the propriety of an application to the Legislature to invest the Mayor, Aldermen, and Commonalty, with the necessary powers. What report issued from this committee we are unable to state, as no minute of it has been preserved. Robert Macomb, in the year 1819, proposed to construct a reservoir at Harlem River, and to supply the inhabitants with water for all domestic purposes. Asking no aid or compensation from the Common Council, this enterprising man engaged to supply his reservoir from Rye Pond, if permitted to lay down his pipes, and to sell the water through the city. This project was submitted to a committee, who treated it with more consideration than was usually bestowed on similar schemes; for they not only reported in its favor, but passed a series of commendatory resolutions. Fortunately for the future inhabitants of the metropolis, this plausible scheme was abandoned, and, in 1822, another survey was decided on, in connection with the River Bronx scheme. Before the completion of this survey, two more imposing plans started up, which seemed at first very likely to be realized. One of these plans was to bring the Housatonic River to New York in an open canal, and an act of incorporation was actually obtained in Connecticut. The other plan was to construct a similar canal to Sharon; and these canals were intended not only to furnish a supply of water, but to serve the purposes of commerce. These schemes were, however, soon abandoned; and Mr. White, the engineer appointed to survey the country between New York and the main source of the River Bronx, presented a favorable report, and estimated the cost of bringing the waters of that stream to a reservoir near the City Hall at about two millions of dollars. As the government of the City Hall took no further action in the affair, the New York Water Works Company was formed in 1825, about the time of the union of the Atlantic with the Canadian Lakes by the opening of the magnificent Erie Canal.

This company, in 1827, found itself unable to proceed, and the New York Well Company was incorporated. Their scheme was to procure water from wells, sunk in the city, but the enterprise failed, as experiments proved, here as in Nottingham, Wolverhampton, Leicester, Manchester, and Liverpool, in England, and in other places in red sandstone districts, that an ample supply of the best water to large cities cannot be procured from wells. Levi Drisbow proposed, in 1828, the sinking of a number of artesian wells to obtain water from deeper levels. He met with some success; but the cost of the undertaking, and uncertainity of the supply, with some other circumstances, prevented the prosecution of this scheme. A number of destructive fires, which caused an immense loss of property, necessitated the adoption of some place for providing water, adequate and available in such emergencies. With considerable difficulty, in the year 1829, the city authorities were constrained to give a reluctant consent to a plan recommended by Alderman Samuel Stevens. This scheme proposed the construction of a well and reservoir in Fourteenth street, whence water was to be distributed in iron pipes. In the following year, a more ample supply of water was proposed to be obtained from other sources, among which was mentioned the Croton River. The adequate supply of pure water obtainable from this source had been incidentally pointed out in former years; but to the memorial of Francis B. Phelps, Esq., presented on the 17th of May, 1830, the city is indebted for the first definite proposal in regard to it.

From that time the opinion gained ground that the Croton River could be carried into the city, and that without it a supply adequate to the present and future wants of the metropolis could not be had. In November, 1832, De Witt Clinton, Esq., of the United States corps of engineers, in conjunction with Aldermen James Palmer, Chairman of the Committee on Fire and Water, Myndert Van Schaick, Chairman of the Committee on Finance, and James B. Murray, Chairman of the Street Committee, made an impartial, thorough and personal examination of the rival schemes, and in December prepared a report in which this opinion is ably supported. They proposed the construction of an open aqueduct, at the estimated cost of $2,500,000. The Legislature, on the 26th of February, 1833, passed an act for the appointment by the Governor and Senate of five persons as Water Commissioners.

This act was drawn up by the Honorable Myndert Van Schaick, and gave the first effectual impulse to the work. The sum of $5,000 being on the fifth of June appropriated by the Common Council, the requisite surveys and estimates, connected with various schemes, were proceeded with by Major Douglas, an eminent engineer, and on the following May another act was passed by the Legislature giving new powers to the Commissioners, and authorizing the Common Council, if they approved any plan adopted by the Commissioners, to submit it to the electors, and to raise $2,500,000 by the creation of a public fund or stock, to be called "The Water Stock of the City of New York." In April, 1835, the Croton plan, having secured the approval both of the Water Commissioners and of the Common Council, was submitted to the electors, when 17,330 votes were given for the scheme, and 5,963 against it.

It is worthy of note, that the wards which contributed the largest amount of taxes gave also the largest vote in favor of the Croton project. In the Ninth, Tenth, and Thirteenth Wards the negative vote preponderated, but in all the others the affirmative was carried by a large majority. The first ward, paying $256,181 of taxes, recorded twenty-seven negatives against 1,417 affirmatives, while the three wards above mentioned recorded 2,251 affirmative and 2,784 negative votes, while the aggregate taxation of the three wards amounted to less than one-third of that paid by the first ward.

After an outlay of nine millions of dollars, this vast undertaking was, by the untiring exertions of the chief-engineer John B. Jervis, at length, completed; and on the fourth of July, 1842, the gates of the new reservoir were thrown open by the President of the Board of Water Commissioners, and the pure limpid stream, diverted more than forty miles from its course, flowed through the new channel prepared for it. On the fourteenth of October following, the mains and pipes were completed, and a public celebration took place in honor of the event. The day was ushered in at sunrise by the roaring of cannon, and by merry peals from all the bells in the city. At nine o'clock a banner was handed, with imposing ceremony, to the Mayor; who, in behalf of the Common Council, presented it to the officers and members of the Fire Department. On one side of this banner the ocean king, Neptune, was represented as victorious over the demon of fire, and on the other side the Queen of Cities was pointing to the magnificent work whose completion was being celebrated. Immediately aftewards a procession seven miles long, composed of citizens and soldiers, left the battery, at the southern extremity of the city, with flags and banners bearing every imaginable device, and attended by numerous bands of music playing national and triumphant airs. At several points the progress of the procession was greeted with the sudden opening of various fountains in different parts of the city. At half-past four in the afternoon an immense concourse of people gathered around the City Hall to listen to the orations of Samuel Stevens and J. L. Lawrence, the former of whom, as President of the State Board of Water Commissioners, entrusted to the latter, as President of the Croton Aqueduct Board, the care of this gigantic work.

The following ode, composed in honor of the occasion by Gen. G. P. Morris, was then sung by the members of the New York Harmonic Society around the sparkling waters of the fountain in the Park:

I.

"Gushing from this living fountain,
Music pours a falling strain,
As the Goddess of the Mountain
Comes with all her sparkling train;
From her grotto-springs advancing,
Glittering in her feathery spray,
Woodland fays beside her dancing,
She pursues her winding way.

II.

"Gently o'er the rippling water,
In her coral shallop bright,
Glides the rock-king's dove-eyed daughter,
Glistening fair in virgin white.
Nymphs and naiads, sweetly smiling,
Urge her back with pearly hand,
Merrily the sylph beguiling
From the nooks of fairy land.

III.

"Swimming on the snow-curled billow,
See the river spirits fair,
Lay their cheeks, as on a pillow,
With the foam-beads in their hair.
Thus attended, hither wending,
Floats the lovely Oread now,
Eden's arch of promise bending
Over her translucent brow.

IV.

"Hail the wanderer from a far-land!
Bind her flowing tresses up!
Crown her with a fadeless garland,
And with crystal brim the cup.
From her haunts of deep seclusion,
Let Intemperance greet her too,
And the heat of his delusion
Sprinkle with this mountain-dew.

V.

"Water leaps as if delighted,
While her conquered foes retire!
Pale Contagion flies affrighted
With the baffled demon, Fire!
Safety dwells in her dominions,
Health and Beauty with her move,
And entwine their circling pinions
In a sisterhood of love.

VI.

"Water shouts a glad hosanna!
Bubbles up the Earth to bliss!
Cheers it like the precious manna,
In the barren wilderness.
Here we wondering gaze, assembled
Like the grateful Hebrew band,
When the hidden fountain trembled,
And obeyed the Prophet's wand.

VII.

"Round the aqueducts of story,
As the mists of Lethe throng,
Croton's waves, in all their glory,
Troop in melody along.
Ever sparkling, bright, and single,
Will this rock-ribbed stream appear,
When posterity shall mingle
Like the gathered waters here."

As the strains of music died away, the voices of the vast surging multitudes were raised, and a succession of hearty cheers closed the ceremonies of this eventful day.

Thus was achieved, during a time of commercial embarrassment, one of the most celebrated aqueducts of ancient or modern times—a monument of the genius and enterprise of the Empire-City of the Western Hemisphere.

THE MAMMOTH GAS CHANDELIER.

Messrs. Cornelius & Baker, of Philadelphia, the pioneers in American gas-apparatus manufacture, have just added another triumph to their already numerous artistic laurels, by the production of a magnificent gas-chandelier intended for the Boston (Mass.) Theatre.

This chandelier is sixteen feet in diameter, twenty-four feet in height; it weighs four thousand pounds and has two hundred and forty burners in imitation of candles, arranged in five rows, diminishing in diameter as they descend. Between the rows of lights are thousands of suspended brilliants hung in festoons, and reflecting, when in full blaze, the most exquisite and delicate tints of the rainbow blended in the softest hues. The style and design of this elaborate work of art is chaste and elegant, while its effect upon an audience and their surroundings will be gorgeous in the extreme.

TO CANVASSERS.

Notice is hereby given that all authority to canvass for the American Gas-Light Journal is hereby revoked. All contracts entered into by our canvassers up to the date when this number of the Journal reaches their several residences will be fulfilled by us, but after that the progress of the Journal must be left to itself, unstimulated by the personal application of canvassers.

From the Pittsburgh (Pa.) *Dispatch*.

The American Gas-Light Journal is a (comparatively) new monthly publication, devoted to light, water, and sewerage, published by John B. Murray, 40 Wall street, New York, at three dollars per annum. It is invaluable to gas and water companies and engineers, giving, as it does, whatever relates to the scientific or practical improvements going on in the manufacture and use of gas. Those interested in sewerage will find it of value in imparting new ideas upon that subject. We recommend it to members of our city councils.

The Manufacture of Photogenic or Hydro-carbon oils from Coal and other Bituminous Substances.—By Thomas Antisell, M.D.

This valuable treatise contains a large amount of information, well worthy the attention of the managers of gas-works, and others engaged in the distillation of coal and bituminous substances. We would particularly direct attention to those parts of the work in which are discussed the general principles of distillation to the resulting products obtained, the various modes of applying heat, and the general remarks on the commercial manufacture of pyrogenic oils. Perhaps no article of commerce better illustrates the effect of necessity in stimulating the inventive genius of Man than that to which this book is devoted. A century and a half ago Boyle and Clayton demonstrated, in England, that when coal was distilled, a black oil, as well as a vapory gas was evolved. Subsequently Dr. Hales, Bishop Watson, and others, described the method of producing oils by the distillation of coal at a red heat. For about a century, however, these discoveries were allowed to slumber, until, at last, the requirements of growing, populous, wealthy cities brought forth one of these discoveries from its secluded neglect, and called gas-works into existence. The other discovery, however, was useless for half a century more, and, perhaps, might have lain neglected and forgotten for a longer period, had not the demand become urgent for rapid solvents of india-rubber; for, in this country and in England, oils are so cheap and plentiful, that the volatile oil obtainable from coal was not valued, and the possibility of obtaining from it a new and cheaper article for lubricating and light-giving uses was little regarded. In continental Europe, however, this last cause did not so extensively operate; for there, the limited supply of animal and vegetable oils stimulated the distillation of bituminous oils. Consequently, this manufacture, in Germany and France, is of less recent growth than in Great Britain and America; and for the last fifteen years it has been carried on with considerable spirit and success. More recently the manufacture of coal-tar has been introduced.

In this country extensive manufactories of coal-oil are in operation—at New York, Brooklyn, Pittsburg, Baltimore, and elsewhere. The processes of purification are, however, very imperfect, as the smoke and disagreeable odor attending the consumption of coal-oil abundantly testifies. Still the demand exceeds the supply, notwithstanding these inconveniences; and, since there are circumstances which in many neighborhoods prevent, at present, the introduction of gas, there is little doubt that, as the processes of manufacture are improved, and the product becomes more pure, this cheap and valuable class of oils, so useful as solvents, as lubricators, and for illumination, will have an increased sale.

The districts are few in the United States where coal oils can be, with advantage, produced; and are chiefly limited to those States where, as in Kentucky, Indiana, Missouri, Pensylvania, Illinois, Ohio, and Virginia, the highly-bituminous cannel-coal can be obtained. New York and Brooklyn owe their advantages for this manufacture to their proximity to the seaboard, and to their consequent facilities for the delivery of the raw material, and for the shipping of the refined oil.

In a future paper we propose to give some further account of the subjects discussed in the valuable work of Dr. Antisell; meanwhile we commend it to the careful perusal of our readers.

The Effect of Carburetted Hydrogen on the Sheathing of Ships.—Notice has been given by the principal manufacturers of Muntz's patent metal, in England, that in consequence of the action of water, strongly impregnated with sulphuretted hydrogen, arising from sewerage gas, and other impurities in the various ports, upon the metal, they will not hereafter give any guarantee of its durability. The signers of this notice are G. F. Muntz; Vivian & Sons; Pasco Grenfel & Sons; Williams, Foster & Co.; Sims, Williams, Nevil & Co.; John Bibby, Sons & Co.; Mason & Elkington; and Newton, Keates & Co. We see great propriety in this notice aside from the reasons given; no guarantee accompanies the sale of sheathing copper, and we do not see why it should be expected with as good if not a better metal. E. W. Barstow, Esq., No. 83 Maiden Lane, is agent for Muntz's metal in this city.

OREGON FOUNDRY,
Nos. 740, 742, 744 Greenwich street, New York.

HERRING & FLOYD, proprietors, manufacture Gas Compensators of all sizes, Self-Acting Valves, Exhausters upon an improved plan, costing less than half those of English manufacture, also castings of every description for Gas and Water-Works.

Herring & Floyd offer for sale Sabbaton's Patent Screening Shovels, for coke and coals, made of malleable iron, of all sizes; Sabbaton's Patent Improved Cast-Iron Furnace Frame and Door, arranged to protect the iron work of the door and frame from direct contact with the fire; also Floyd's Patent Malleable Iron Retort-Covers, only quarter of an inch thick, but of convex form, and of great strength, as is attested by certificates from several of the leading Gas-Works in America. For engravings of all the above Patents see AMERICAN GAS-LIGHT JOURNAL for October, 1859, pp. 65 and 71.

Samples of the above castings can be seen at the Rooms of the AMERICAN GAS-LIGHT JOURNAL, No. 254 Canal street, East, near Broadway, New York.

Fire Insurance Companies.

ATLANTIC,
No. 14 Wall street, New York.
CAPITAL $150,000.—ASSETS $259,772.
Horatio Dorr, *Sec'y.* John D. Cocks, *Pres't.*

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No. 67 Wall and 58 Bowery, New York.
CAPITAL $150,000.—ASSETS $316,500.
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No. 62 Wall street, New York.
CAPITAL $210,000.—ASSETS $345,000.
Sam'l Townsend, *Sec'y.* Geo. S. Fox, *Pres't.*

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No. 18 Wall street, New York.
CAPITAL $500,000.—ASSETS $965,681.
H. H. Lamport, *Sec'y.* Geo. T. Hope, *Pres't.*

EXCELSIOR,
No. 6 Broad Street, New York.
CAPITAL $200,000.—ASSETS $250,000.
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FIREMEN'S FUND.
No. 108 Broadway, New York.
CAPITAL $150,000.—ASSETS $164,688.
H. Beeckman, *Sec'y.* Nathan B. Graham, *Pres't.*

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No. 27 Wall street, New York.
CAPITAL $400,000.—ASSETS $1.656,997.
J. A. Bancker, *Agent.*

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No. 40 Wall Street, New York.
CAPITAL $200,000.—ASSETS $290,000.
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No. 19 Nassau st. & 8d Av. cor. 25th st., N. Y.
CAPITAL $200,000.—ASSETS $230,000.
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R. Garrigue, *Sec'y.* Maurice Hilger, *Pres't.*

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No. 50 Wall street, New York.
CAPITAL $150,000.—ASSETS $192,000.
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The capital of this Company has been recently INCREASED BY A CASH SUBSCRIPTION OF $400,000, making the present capital
ONE MILLION DOLLARS,
WITH
A SURPLUS IN ADDITION OF OVER $300,000.

This Company INSURES AGAINST LOSS OR DAMAGE BY FIRE, on terms as favorable as the nature of the risk and the *real security* of THE INSURED and of the Company will allow.

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CAPITAL $150,000.—ASSETS $181,000.
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No. 81 Pine street, New York.
CAPITAL $200,000.—ASSETS $266,000.
Thos. W. Birdsall, *Sec'y.* Jos. Walker, *Pres't.*

JERSEY CITY WATER BONDS.
The Coupons of the Jersey City Water Bonds, due this day, will be paid on presentation at the Continental Bank, New York, or at the Mechanics' & Traders' Bank, Jersey City, on and after the 3d inst.

CHARLES FINK,
President Water Board.
Jersey City, December 28th, 1859.

LAW REPORTS.

THE ST. NICHOLAS HOTEL WATER TAX.—DECISION OF THE SUPREME COURT IN FAVOR OF THE CROTON AQUEDUCT BOARD.

John P. Treadwell et al. vs. *Myndert Van Schaick, President, et al.*—This was an injunction suit brought by the proprietors of the St. Nicholas Hotel against the Croton Aqueduct Board, to prevent them from cutting off the supply of Croton water at the hotel for non-payment of the water tax. It was argued lately before the General Term, on appeal from the decision of Justice Roosevelt, which was in favor of the Croton Board.

It appeared from the evidence that in 1853, the plaintiffs paid for the use of the Croton water the sum of $1,204 16, and for the year 1854, $1,545 75; that in 1855 the defendants attached meters to the pipes leading to the premises of the plaintiffs, for ascertaining the quantity of water used by them; and that the result of such examination proved that in ninety-six days, between July and November, the water used by the plaintiffs exceeded 8,000,000 of gallons, and that the whole amount of water used on the premises of the plaintiffs from May, 1855, for one year, exceeded 37,000,000 of gallons.

For this quantity of water the defendants claimed, for that year, at the rate of one cent. for every 100 gallons of water. This the plaintiffs refused to pay, and, in consequence of such refusal, the Croton Board notified the plaintiffs that they would stop the supply of water. The plaintiffs thereupon commenced this action, and obtained an injunction against the defendants.

Upon the trial of this action, Mr. Justice Roosevelt held, that the defendants were justified, on the refusal of the plaintiffs to pay the amount claimed, after notice given them, to cut off and stop the supply of water, and that the defendants were entitled to judgment and a dissolution of the injunction.

The plaintiffs excepted to these rulings. Upon the argument of this case, it was urged, on the part of the plaintiffs, that the Croton Board had no authority to cut off and stop the supply of water, and that the Croton Board had no authority to charge at the rate claimed for the water used by the plaintiffs.

The General Term have rendered their decision, affirming the judgment below. A long and able opinion has been rendered by Justice Ingraham.

The Court held that the Croton Aqueduct Board has the power to cut off the supply of water for non-payment of the Croton water rate; whether the "regular rents," apportioned by the size, character, and use of the building, or the "extra rents," chargeable in addition to the regular rents upon buildings which consume an extra supply of water.

2. That full power exists in the Croton Board, under the statutes and ordinances, to make special charges for the use of the water in special cases, for which the rate is fixed by law, and the Board had, therefore, authority to impose a charge for the extra water consumed by the hotel.

3. In respect to the proof as to the quantity of water used by the hotel, the Court say:—This is a question of fact to be found by the Court. The only ground on which we can render that finding is, that it is against the weight of evidence. No evidence has been inserted in the papers submitted to us on this appeal. We must, therefore, take the findings of facts, as made by the Court, to be correct, and can only look at the questions of law presented in those findings.

The amount of water which the Court has found was used during the year by the plaintiffs, was 36,072,744 gallons, and was less than would have been consumed at the average rate of 10,000 gallons per day. The provisions of the ordinance, so far as it applies to a quantity which exceeded that amount, have nothing to do with this case, and there is no charge prescribed in the ordinance applicable to it. It would, therefore, come within the discretionary power conferred on the Commissioners, and which they may lawfully exercise. In fixing the rate to be paid, they have adopted the minimum rate prescribed by the Common Council for the use of a large quantity. Of this the plaintiffs have no cause to complain. The extra use of water is not compulsory. If they use it, they should be willing to pay the price which the authorities have stated to be the lowest sum at which the Aqueduct Department should furnish such supplies. If not so paid, the course taken by the agent was one authorized by the law, and necessary for the proper management of the Department, and without the remedy then adopted, the Department would be remediless.

COURT OF COMMON PLEAS—TRIAL TERM, DECEMBER 20.
Before Hon. Judge Brady.

James McCunn vs. *The Manhattan Gas-Light Company of the City of New York.*—This was an action to recover damages for injury and destruction to plaintiff's lots, buildings, and machinery situated at Seventeenth street, between Tenth and Eleventh avenues, adjoining the premises of the Manhattan Gas-Light Company, in this city. It appeared from the evidence that the defendant built in 1858 two tanks for holding gas, and that in consequence of the excavation which was made, the plaintiff's lots sunk, and his house was rendered useless. The building was valued at $3,000, and was said to be rented at $500 per annum, and plaintiff claimed $5,000 damages for loss of property, and a similar amount for injury to his business. The defendants set up a denial of their liability, and produced testimony to show that the plaintiff's business was not injured by the accident. Verdict for plaintiff $3,000. The defendants offered the plaintiff in December, 1858. $3,100 as compensation for damages sustained, which he refused to accept, claiming $10,000 as above stated.

NEW ROOMS
OF THE
AMERICAN GAS-LIGHT JOURNAL.

THE office of the AMERICAN GAS-LIGHT JOURNAL has been removed, as is indicated in the title of this number, to the NEW IRON BUILDINGS, No. 254 CANAL STREET, EAST, CORNER OF ELM STREET, NEAR BROADWAY. Spacious rooms are being arranged for the reception of every description of gas-apparatus, from the "retort" to the "burner," so that all who wish to send samples of any kind of gas-apparatus, will please write us at once.

Officers of gas-works and others visiting New York will find private desks and portfolios entirely at their service at the Rooms of the AMERICAN GAS-LIGHT JOURNAL, No. 254 Canal street, East, where their letters should be addressed, and every facility will be extended to promote their business and their comfort while they remain in the city.

The next number of the JOURNAL will contain a view of our new buildings, with a sketch of their arrangement.

HIGHLY GLAZED FIRE CLAY PIPES,
FOR SEWERAGE AND WATER PURPOSES,
GAS RETORTS, FIRE BRICKS, &c.

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74 Broadway, - - - - - - - NEW YORK,
AGENT FOR THE
"FIELDHOUSE FIRE CLAY WORKS,"
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Is prepared to treat with Corporations, Contractors, and Gas Companies, &c., for the supply of the above articles, either in Liverpool, or delivered at any important port on the Atlantic Coast, from New Orleans to Montreal. The Fieldhouse Pipes have been used for the sewerage of the principal cities and towns in England, and are now being extensively used for the sewerage of the city of Brooklyn. They are impervious to moisture or decay; will stand great internal and external pressure, and are cheaper than either brick or stone sewers.

Further information can be obtained by application to
WILLIAM McKEAN,
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Pipe Yard—Furman street, between Joralemon and Atlantic streets, Brooklyn.

JOHN ROGERSON & CO.,
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MIDDLESBRO'-ON-TEES,
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SUPPLY
GAS COAL, CLAY RETORTS,
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Gasometers, &c.

A partner of the above house being now in this country, will be glad to wait upon any gas company requiring supplies.

Agents, MEAD & BELL,
17 William street,
New York.

ARTESIAN WELL AT MANCHESTER, N. H.—Mr. B. F. Martin commenced boring last spring, and after digging in gravel ten feet, came to the ledge. He then commenced drilling with a six-inch drill, and continued for 190 feet in the rock, when he gave it up, the borers becoming discouraged. Mr. Martin thinks there is a great deal of water in the rock, as he raised a two-inch stream with a four-foot copper pump eighty feet long. It is Mr. Martin's intention to recommence operations in the spring with steam power.

DARDONVILLE'S BRILLIANT.—We have noticed in the windows of Dardonville's establishment, No. 623 Broadway, a Parisian chandelier of much elegance and taste. It is *doré*, enriched by heavy prisms, and will richly adorn the *salon* of any of our nabobs.

ROBERT JONES.] **JONES & LENNIG.** [JOSEPH LENNIG.

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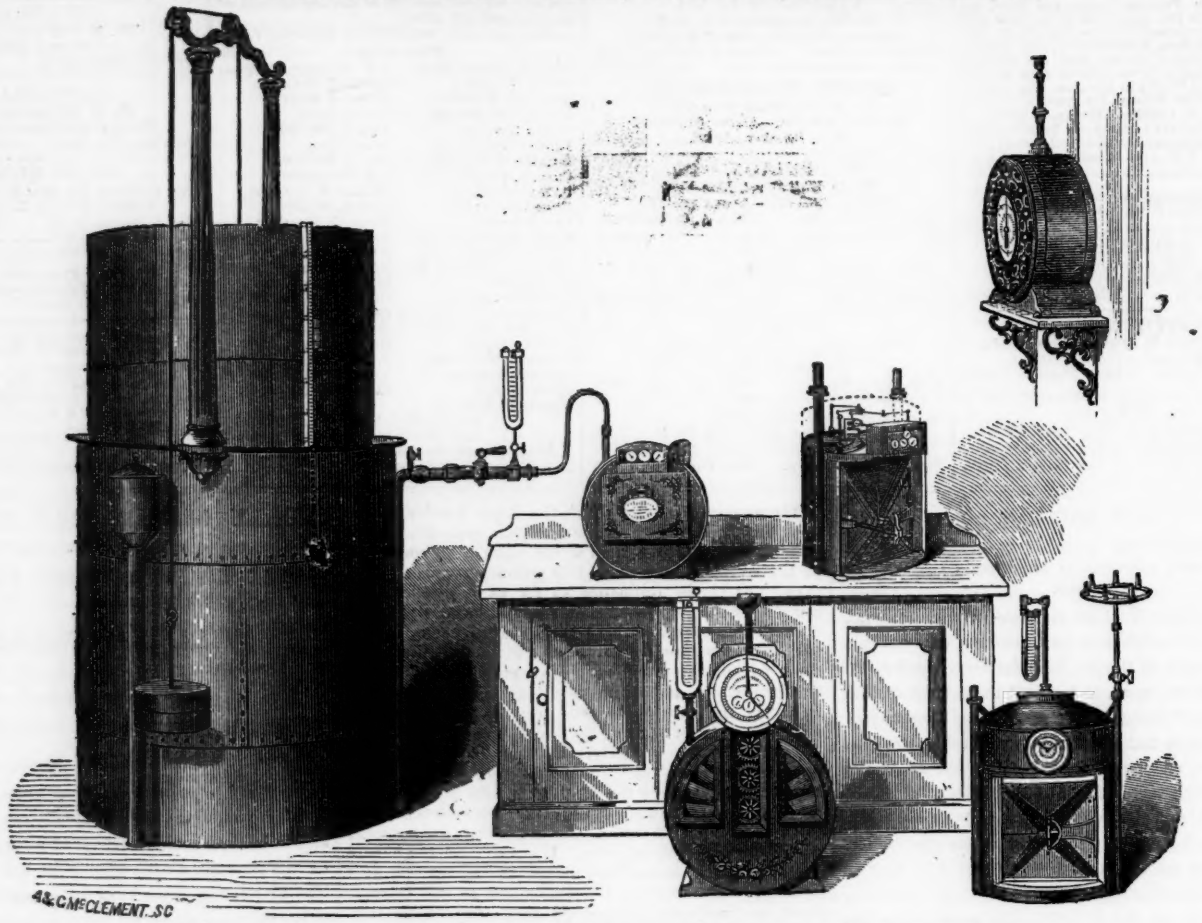
CUSTOMER METERS (Wet and Dry), STATION-METERS, EXPERIMENTAL METERS, Show-Meters, Meter-Provers, Burner-Provers, Pressure-Registers, Pressure-Indicators, Pressure-Gauges, Mercury-Cups, Governors, Centre-Seals, &c., &c.

Nos. 313 and 315 NEW MARKET STREET, above VINE, PHILADELPHIA, PA.



TO GAS-LIGHT COMPANIES, GAS ENGINEERS AND GAS WORK BUILDERS.

An experience of over *fourteen years* gives us confidence in calling attention to the superior instruments, both Dry and Wet, we are now manufacturing. Our materials are of the best in use; the strictest attention is given to workmanship, and we guarantee entire satisfaction to all purchasers, pledging ourselves to fidelity and promptness. Our establishment is open for inspection, and we respectfully challenge superiority of workmanship.

Meters for use in New York will be sealed by the Inspector of that State.

MEDALS AWARDED TO THOMAS GLOVER'S PATENT DRY GAS-METERS

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THOMAS GLOVER thinks it necessary to put Gas Companies on their guard against parties selling Patent Dry Gas-Meters constructed in imitation of his, but unskilfully made on erroneous principles, and with improper and unsuitable materials.

THOMAS GLOVER'S Workshops are now the most extensive in this or any other country, and he is thereby enabled promptly to execute orders to any extent required. Purchasers may, at any time, inspect his Works and the materials of which his Meters are constructed

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GAS,-STEAM, SMOKE, PURE WATER AND SOIL PIPES,

CLAY RETORTS, TILES, BRICKS,

AND EVERY VARIETY OF FIRE GOODS.

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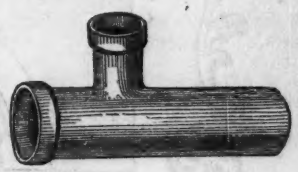
T. W. PARMELE, Agent, No. 4 Irving Place, New York.



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THESE Retorts stand unrivalled, and are adopted invariably by the BRITISH GOVERNMENT in all their Works. They are rendered unusually smooth, and free from cracks, thus preventing leakage and the adhesion of carbon to the interior.

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TO PREVENT THE FREEZING OF GAS-PIPES.

FOR HOUSES, &C.

JOHN WALTON'S

PATENT.

Fig. 1

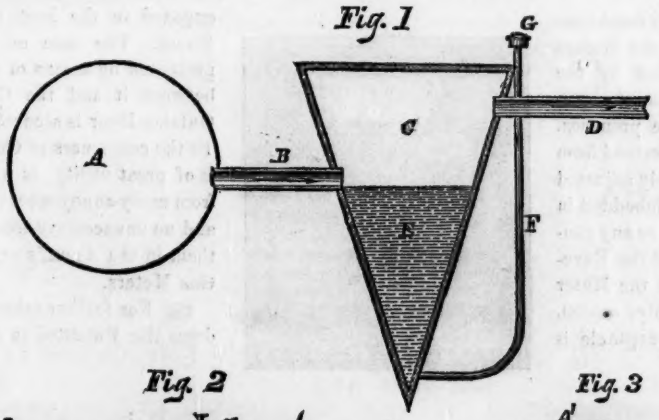


Fig. 2

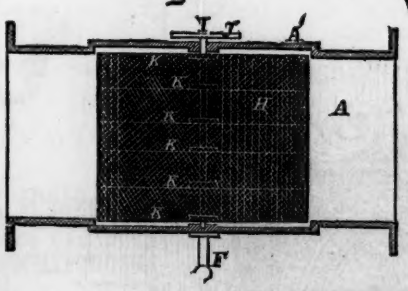
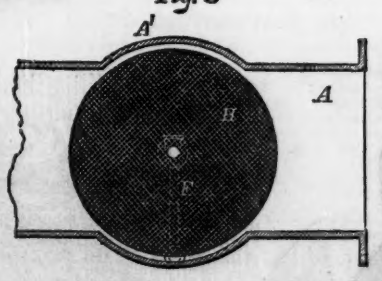


Fig. 3



FOR GAS WORKS.

FIGURE 1.—To be placed in the Street.

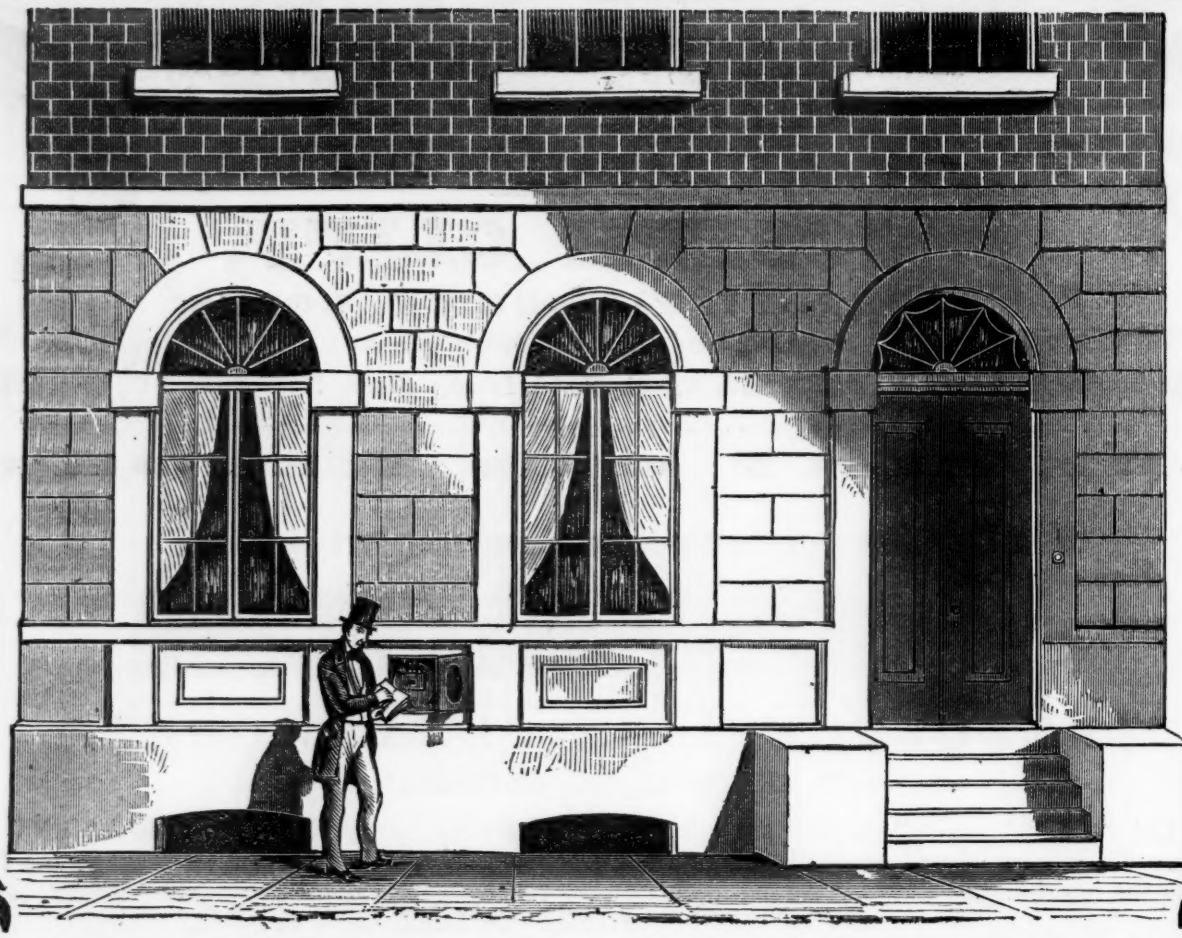
(A represents the street; (B) the connecting pipe; (C) the vessel; (D) the service pipe; (E) the alcohol or other liquid; (F) the pipe used to fill the vessel; (G) the cap to close the pipe.

FIGURES 2 and 3.—To be placed on Main at Gas Works.

(A) represents the main pipe; (A') an enlargement thereof; (H) a wire gauze cylinder, which is rotated slowly; the lower port of the pipe is filled with alcohol or other liquid, keeping the cylinder constantly wet; (K K, &c.,) show simple disks within the wheel; (H) to increase the wetted surface; (F) is the pipe used to fill or withdraw the liquid used:

The undersigned would respectfully call the attention of Gas Companies to his improved ANTI-FREEZER, which he guarantees to prevent the freezing of all pipes to which it is applied, at a less cost than any other known process. Further information can be had by addressing—

JOHN WALTON, Louisville, Ky.



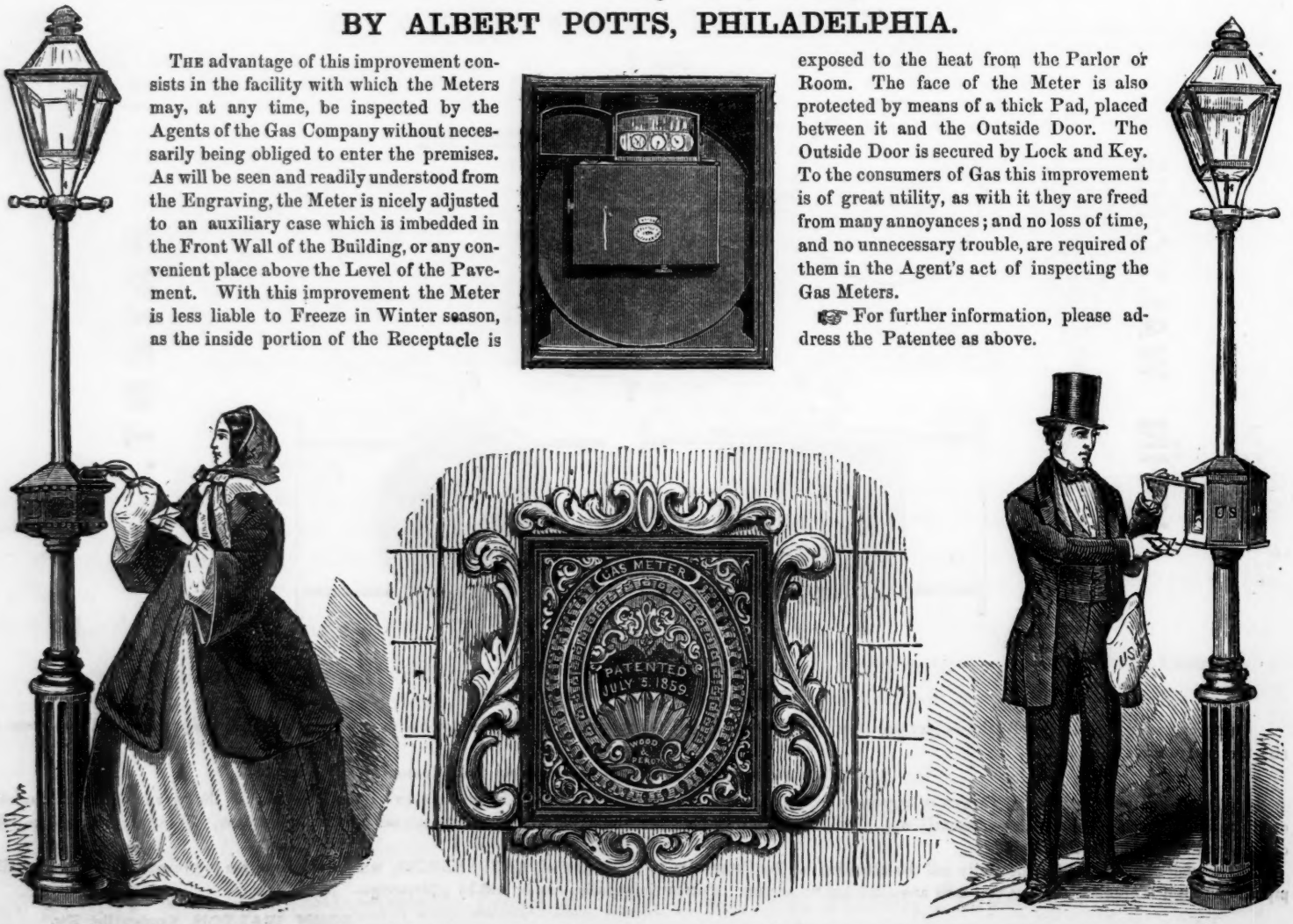
IMPROVED MODE OF SETTING GAS METERS IN THE WALLS OF BUILDINGS.

Patented July 5th, 1859,

BY ALBERT POTTS, PHILADELPHIA.

THE advantage of this improvement consists in the facility with which the Meters may, at any time, be inspected by the Agents of the Gas Company without necessarily being obliged to enter the premises. As will be seen and readily understood from the Engraving, the Meter is nicely adjusted to an auxiliary case which is imbedded in the Front Wall of the Building, or any convenient place above the Level of the Pavement. With this improvement the Meter is less liable to Freeze in Winter season, as the inside portion of the Receptacle is exposed to the heat from the Parlor or Room. The face of the Meter is also protected by means of a thick Pad, placed between it and the Outside Door. The Outside Door is secured by Lock and Key. To the consumers of Gas this improvement is of great utility, as with it they are freed from many annoyances; and no loss of time, and no unnecessary trouble, are required of them in the Agent's act of inspecting the Gas Meters.

☞ For further information, please address the Patentee as above.



United States Mail-Stations fixed to Lamp-Posts (Potts' Patent) to provide Increased Postal Facilities for large cities.

(See AMERICAN GAS-LIGHT JOURNAL of October 1, 1859, page 60.)

ALFRED F. JAMES.
Collection, Exchange and Land Agency,
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REFERENCE:
John B. Murray, New York.

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REFERENCES.
Duncan Sherman & Co., N. Y. — Peter Wainwright, Esq., Boston.
Richard Irvin & Co., " — Ogden, Fleetwood & Co. Chicago.
John B. Murray, " — Erastus Corning, Esq., Albany.
Union Bank, " — Wm. Fisher & Son, Baltimore.
Webster Bank, Boston. — J. P. Kilbreth, Cincinnati.
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Invite public attention to their IMPROVED TIGHT STITCH SEWING MACHINES, which for beauty of construction, elegance of finish, and perfectness in Sewing, are unequalled by any in the market.

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The best family machine in the market.
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AT GREATLY REDUCED PRICES,
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Office for the Inspection of Gas Meters,
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AGENT FOR
SCAMMON'S CELEBRATED GAS APPARATUS,
FOR EITHER COAL OR ROSIN GAS.
GAS FIXTURES OF ALL DESCRIPTIONS.
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MANUFACTURES
Gasometers, Retort House Roofs, Water Tanks, Purifying Boxes, Coal Cars, Coke Barrows, and all kinds of Wrought Iron Work for Bridges, Buildings, &c., &c.
☞ Particular attention paid to Alterations and Repairs. ☜
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JOHN C. CRESSON, Engineer Gas-Works, Philadelphia.
JOSEPH A. SABBATON, Engineer Manhattan Gas-Works, New York.
Col. W. S. CAMPBELL, Engineer Gas-Works, New Orleans.
P. A. SABBATON, Engineer Gas-Works, Albany.
WATERHOUSE & BOWES, Gas Engineers, Raleigh, N. C.
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We wish to call the attention of Gas-Light Companies, Gas Engineers, and all others who contemplate the purchase of Gas Meters, to the fact that we are now manufacturing, and prepared to fill all orders in the above line upon terms as favorable as any other manufacturers in the country.
Having improved, simplified, and so far perfected the mechanical construction of our Meters as to render them unquestionably equal, if not superior to any others now in use, we can confidently offer them to purchasers as such. The extreme simplicity of our Dry Meters renders their wear and liability to get out of order, less than any other meter in the Market. First-class workmen only employed, and the best materials used. All work warranted.
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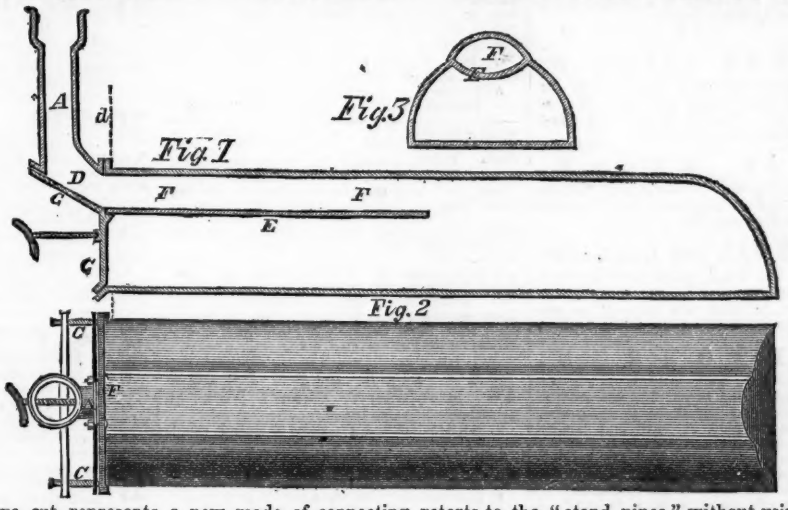

THE above cut represents a new mode of connecting retorts to the "stand pipes" without using "mouth pieces," thus saving the drilling the flanges and making the joints, as well as some 250 lbs. of casting, and several bolts for each retort set. A narrow piece of the door C. closes the lower end of the stand-pipe. The plate E. is a separate piece, thinner than the retort, and may be secured to the door C., or slid over grooves made in the retort for that purpose. The retort is set in the ovens to the dotted line *d*. This mode of connecting may be applied to clay as well as iron retorts. Address

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CANNEL and COAL
OF THE BEST DESCRIPTIONS
FOR MAKING GAS AND COKE.

ANALYSES OF CANNEL,
Showing, from the most recent tests, the productive power (in volume) of each kind of material.

	GAS. Per ton, 2240 lbs. In Cubic Feet. At 60° temperature.	COKE. Per ton, 2240 lbs. Cwt.	Qrs.	Lbs.	Quality of Coke.	Ammonia Water in Gallons.	Tar in Gallons.	Illuminating power * per burner consuming 5 feet Gas per hour.	Price per ton free on board vessels in Liverpool	Price at $4.80 per £ sterling.
1	11,700	13	2	7	Good.	16	19	22.50	17s.	$4.08
2	11,000	13	1	16	"	18	16¼	21.25	15s. 6d.	3.72
3	10,000	11	2	0	Inferior.	25	15¼	20.00	14s.	3.36

ANALYSES OF COAL.

No.	GAS Per ton, 2240 lbs. In Cubic Feet.	COKE. Per ton, 2240 lbs. Cwt.	Qrs.	Lbs.	Quality of Coke.	Ammonia Water in Gallons.	Tar in Gallons.	Illuminating power * per burner consuming 5 feet Gas per hour.	Price per ton free on board vessels in Liverpool.	Price at $4.80 per £ sterling.
1	11,000	13	1	16	Good.	16	11¼	14.00	11s. 6d.	$2.76
2	9,600	13	3	0	"	28	10	10.40	9s. 6d.	2.28
3	9,300	13	2	0	"	24	12	9.80	8s. 6d.	2.04

* Equal to Spermacetti Candles, burning 120 grs. per hour.

The above analyses embrace the best Cannel and Coal raised in the Lancashire, &c., districts, and are tabulated, for safety, rather below the average results. They are large, well screened, and free from dirt when delivered on board vessels, and are used for gas purposes at the chief gas works in England and on the Continent.
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The prices quoted will in all cases be subject to such alterations, more or less, as the case may be, as may arise in the market between the issue of this offer and the time at which the order may come to hand.
TERMS:—Cash, on presentation of the bills of lading at your bankers or agents in Liverpool, or as may be otherwise arranged, less 2½ per cent. discount
Also, HAND PICKED CANNEL and COAL, for house use.
Concessions in prices made for large quantities.
GAS APPARATUS of all descriptions and on the most approved principles. Also, Purifying and other materials supplied.
ANALYSES, PLANS, and ESTIMATES, and other information required, and the highest references, furnished on application.
Contracts for materials and works entered into. No charge made for superintending shipments, preparing bills of lading, or passing entries.

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Cohoes, N. Y.	Tarrytown, N. Y.
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Gas Work Castings of every description.

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SARONY, MAJOR & KNAPP, practical Lithographers, Engravers, and Printers, No. 449 Broadway, design and execute Certificates of Stock for Gas and Water Companies; also, Check and Note Books, with vignettes of Meters, Gas-Holders, Reservoirs, &c., and all other special and commercial work, at the lowest prices.

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PATENT PYRO-CLAY GAS- Retorts.

THOS. HOADLEY, Patentee, wishes to call the attention of Gas Engineers to these Retorts as a very superior article.

REFERENCES:—Gas-Light Works, Buffalo, N. Y.
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BAKER'S IMPROVED LOW- Pressure, Self-Regulating, Steam Warming and Ventilating Apparatus, for warming and ventilating private dwellings and public edifices. Its advantages are cheapness of construction, entire safety from explosion or fire; its self-regulation, economy in fuel, inability to freeze, quickness of operation, steadiness of heat, freedom from noise, simplicity and ease of management and durability.

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A large and elegant assortment of Chandeliers, Brackets, &c. Gas Pipe and Posts made for Gas Companies on favorable terms.

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Plans and specifications furnished and Works erected for cities, towns, and villages. Rosin Works altered and repaired. Pipe, &c., furnished and laid for Water and Gas.

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BRAMHALL, HEDGE & CO., 442 Broadway, New York, offer for sale Shaw's Patent

Gas Cooking Stoves, 8 sizes,	Gas Laundry Stoves,
Gas Steak Broilers,	Gas Bath R'm Stoves,
Gas Smoothing Irons,	Gas Heating Stoves,
Gas Nurse Lamps,	Gas Oyster Roasters,
Gas Bread Toasters,	Gas Ovens, 5 sizes.
Gas Hatters' Irons,	Min. Gas Furnace.

Call and see them at 442 Broadway, between Howard and Grand streets, N. Y.

COAL FOR GAS-WORKS. Samuel Thompson's Nephew, Importer of English, Cannel and Newcastle Coal, No. 63 Pine, 145 Rivington, 149½ Seventh avenue, and 45 Gold street, New York.

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Being adapted to any material containing gas, the Aubin Works use as the gas-making material, cotton seed at the South, rosin in the Carolinas, cannel coal in Pennsylvania, and rosin and coal mixed, in the Northern and Eastern States; and are so simple in construction and operation, that Gas Companies, even in small towns, can make a rich, and therefore cheap gas, and still pay dividends. Parties inquiring will be referred to towns of 3,000 to 4,000 inhabitants, using the Aubin Works, where the net earnings on the stock are from ten to fifteen per cent.

General office of the Aubin Gas-Works Company, 44 State street, Albany, New York.

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Glasgow Mills,	"	Clyde,	"

Wheeler & Wilson Works, Bridgeport, Ct.

OFFICE OF THE NEW YORK Gas-Light Company. December 20th, 1859. The annual election for Thirteen Directors of this Company will be held on Monday, the 9th day of January next, from 11 to 12 o'clock, A.M., at the office, 174 Centre street. The Transfer Book will be closed from the 22d inst, until after the election. By order,

C. L EVERITT, Secretary.

TO GAS-FITTERS. Wanted — A Good Gas-Fitter. None others need apply. WM TOWERS, 31 Carmine street, between Bedford and Bleecker sts.

ADDISON POTTER, Willington Quay, near Newcastle-upon-Tyne, England, manufacturer of Clay Retorts, Fire-Bricks, and every description of Fire-Clay goods.

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FLEXIBLE GAS FITTINGS.

The existing great demand for Hancock's ENAMELLED or GLAZED FLEXIBLE TUBING, and the increased facilities of manufacturing it, is an assurance of the satisfaction experienced by the public in the use of this article, so extensively made by JAMES LYNE HANCOCK, OF LONDON, who begs now to announce to the trade, that he continues to export, to a large extent, FLEXIBLE GLAZED TUBING for GAS, Surgical, and other instruments, now in such general use amongst Gas Companies, Engineers, Gas-Fitters, and others.

This is the only TUBING that perfectly resists the action of Coal Gas. It is made of all sizes, from ¼ inch up to 1¼ inches, and in 60 feet lengths. The measure is always external diameter to connect the usual metal fittings.

SOLID VULCANIZED INDIA RUBBER TUBING, for GAS, WATER, &c., made of all sizes, and in 60 feet lengths, either with or without spiral wire inside.

For price lists, and any other information, apply to JAMES LYNE HANCOCK, VULCANIZED India Rubber Works, 8 Goswell Road, (opposite Spencer street,) LONDON, E. C.

N.B.—All orders by post, with remittance, or good reference in England, will be promptly executed.

NATIONAL GAS APPARATUS. GEORGE BOWER, Gas Engineer and Contractor, St. Neots, Huntingdonshire, England, Contractor for the erection of Gas-Works of any magnitude, and manufacturer of Gas-Fittings, Meters, Regulators, and all apparatus connected with the production and distribution of gas. Patentee of the following:

1st. Portable Cannel Coal Gas Apparatus, requiring neither skilled labor nor brickwork to fix, but complete in itself for 10, 20, and 30 lights; specially adapted for cannel coals which do not coke.

2d. Retorts fed and discharged by machinery, so that the gas-making by this apparatus is conducted without any nuisance whatever; adapted for 40 and 70 lights, and for cannel coal of the Lancashire quality.

3d. Combined apparatus, forming in one vessel the Hydraulic Main, Condenser and Purifier; adapted for all sized works, from 100 up to 500 lights, and any quality of coal may be used with these works.

The advertiser has patterns complete for all sizes up to 2,000 lights, and can forward orders expeditiously. He requires first-class houses to represent him in America, Canada, and the Brazils. All applications to be prepaid.

WILLIAM RYDER, General Mineral and Metal Agent and Merchant, 4 Dean street, Newcastle-on-Tyne, England, is prepared to supply Gas Companies and others with every variety of appliance for the production and supply of Gas, including Gasometers, Retorts (metal and clay), Fire Bricks, Coals, Metal Mains, Tubes, in wrought iron, copper, brass, lead or composition, Meters, Taps, Fittings, &c., &c., and from his extensive experience in this class of work, can guarantee everything of the best description.

COWEN'S PATENT FIRE-CLAY Retorts.

JOSEPH COWEN & CO., Blaydon Burn, near Newcastle-on-Tyne, England, were the only parties to whom a Prize Medal was awarded at the Great Exhibition, in London, of 1851, for "Gas Retorts and other objects in Fire-Clay."

J. C. & Co. have been for many years the most extensive manufacturers of Fire-Clay Retorts in the United Kingdom; and orders for Fire-Clay Retorts of all shapes and dimensions, Fire-Bricks, and every other article in Fire-Clay, are promptly executed at their Works, as above.

COWEN'S GARESFIELD COAL AND COKE.
Coal and Coke office,
QUAY SIDE, NEWCASTLE-ON-TYNE.

MOST IMPORTANT TO ALL Consumers of Gas.

HART'S PATENT GAS-BURNER.

HART'S PATENT ECONOMIZING GAS-BURNERS have been adopted by thousands of public and private establishments, Gas Companies, for Street-Lamps, &c., &c., in various parts of Europe (after proving the utter worthlessness of GAS REGULATORS, and other inventions ALLEGING TO produce a MAXIMUM amount of light with a MINIMUM amount of gas, and are considered by all who have given them a trial to be the most economical—effecting a positive saving from 5 to 35 per cent.—and the only means capable of producing a white, thin, and pure flame of such brilliancy as was never before obtained from Gas by whatever means consumed, as proved by Photometrical tests, made with the most improved instruments by Bunsen, Wheatstone, King, and Wright, *the superior light varying in degree from 5 to 100 per cent.* This invention, patented by Mr. HART (of Fleet street, Loudon,) in England, France, Belgium, and other foreign parts, is now being universally adopted, and will doubtless continue to be so long as Gas is used.

The principle of the Invention consists in the gas being (in its passage through the burner) resisted primarily by a fibrous material, thence passing through a diaphragm of felt, encased in two perforated metallic discs, so that the pressure with which the gas is supplied from the mains becomes checked and permits the gas to reach the orifice of the burner with only such velocity as may be requisite to develope a FULL AND BRILLIANT FLAME, while perfect combustion is simultaneously secured, and thus is prevented the escape of unconsumed gases, which so deteriorate the atmosphere as to produce a most injurious effect upon the health, and are alike destructive of works of art.

HERBERT WILLIAM HART,
69 Fleet street, London.
Or care AMERICAN GAS-LIGHT JOURNAL, N. York.
(For engravings see AMERICAN GAS-LIGHT JOURNAL for December, 1859, page 100.)

C. R. WOODWORTH, Manufacturer of Portable Gas-Works, No. 1 Cedar st., near Pearl st., N. Y. City.

LIGHT, WATER, AND SEWERAGE PATENTS.

UNITED STATES.

26,163.—Matthias P. Coons, of Brooklyn, N. Y., for an Improvement in Apparatus for Generating Illuminating Gas:

I claim, first, The particular form and manner of constructing and combining a gas-generating retort, consisting of a fusion-chamber and barrel, as represented in Fig. 1, A, Nos. 1 and 3, as combined for the purpose specified.

Second, I also claim the diaphragm, J, in combination with the chamber, F and D, and diaphragm, N, as represented in Fig. 4, in the manner and for the purpose specified.

Third, I also claim the chamber, H, (Fig. 7), constructed as and in combination with the other apparatus specified.

Fourth, I also claim the chamber, K, (Fig. 9), as attached to the cover, M, in connection with the escape-pipe, L, with a stop-cock, or its equivalent, attached in the manner and for the purpose specified.

Fifth, I also claim, in combination with the apparatus specified, the projecting ridge on facing-rim or flange, O, and the corresponding groove, P, in the door, N; and I also claim, in combination, the yoke or bar, R, and crank screw S, as combined; and also the hook-hinges, X (all of which are represented by Fig. 10), as set forth and specified.

26,200.—John K. O'Neil, of Kingston, N. Y., for an Improvement in Vapor Lamps:

I claim the arrangement of the auxiliary burner, G, in connection with the gas-generating chamber, E, in such a manner that a cessation of its action on said chamber may at any time be effected without extinguishing its light by the separation of said burner from its influence on said chamber, as described, and for the purpose specified.

I also claim the spiral revolving shade in combination with the auxiliary burner, as described, and for the purpose set forth.

I also claim the construction and arrangement of the burner, G, and graduating tube, g, in combination, as described and for the purpose specified.

26,210.—James Stratton, of Brooklyn, N. Y., for an Improved Apparatus for Regulating the Pressure of Water in Pipes:

I claim the employment or use of the air-chamber, E, diaphragm, D, or its equivalent, with valve, C, attached, the pipe, B, containing valve, C, and communicating with the air-chamber by pipe, F, provided with the cocks, H I, and the pipe, C, communicating with the pipe, F and B; the above parts being arranged in relation with each other and the supply pipe, A, to operate as and for the purpose set forth.

26,211.—L. Taylor, of Jordan, Wis., for an Improvement in Apparatus for Elevating Water from Wells, &c.:

I claim, first, The employment or use of the springs, D, arranged in connection with the travelling jackets, G I, and receivers, B B, to operate as and for the purpose set forth.

Second, The means, substantially as shown, of connecting the bucket, I, to the carriage, J, to wit, the lever, x on the carriage, provided with the loop, w, and the bail, w' of the bucket, with its pulley, v, in connection with the pulleys, e', on the carriage and the taper rod, g', and catch, h', in the well-house, L, whereby the bucket is drawn up the wire or way and dropped and raised from the well.

[This invention relates to certain improvements in that class of water-elevating devices in which the buckets or pails are connected to carriages that run on inclined wires or ways from the well or spring to the house. The object of the invention is to facilitate the application of the device or its adaptation in all cases where it may be applied, and at the same time facilitate the operation of the bucket both as regards its travel over the inclined wire or way; its filling and emptying; also the proper manipulation of the same to ensure the durability of the device.]

26,224.—Harry Abbott, of North Huron, Ind. (assignor to himself and Emerson Abbot, of same place), for an Improvement in Centrifugal Water-wheels:

I claim the combination, with a centrifugal water-wheel, A, of a valve, E, located and arranged within said wheel so as to turn with it, and, at the same time, be adjustable while the wheel is in motion, by means of the bail, c, concentric rod, H, and adjusting-lever, I, substantially as set forth.

26,243.—Wm. Boch, Sen., of Green Point, N. Y., for an Improved Water closet Basin:

I claim, as an improved article of manufacture, a water-closet basin, having a covered annular water passage, B, at its upper edge, as shown and described.

26,255.—Seth L. Cole, of Burlington, Vt., for an Improvement in Gas-burners:

I claim the construction, from some good conducting material, as set forth, of a gas-burner, with an enlargement of the tube at the point where the gas is discharged and burned in the form of a globe, or the like, furnished with a slot aperture, as described, so that the gas shall be heated to the utmost at the point where it is consumed.

26,274.—Wm. Linton, of Baltimore, Md., for an Improvement in Filters:

I claim arranging a clamping-plate, B, of less diameter than the filtering cylinder, on adjusting screws, g, of the removable head, c, of the cylinder, A, substantially as and for the purpose set forth.

[This cylindrical filter receives the water at one of its ends, changes the direction of the course of the same, and causes it to pass in opposite directions, then to take a course back through three layers of felt, which deprives it of all impurities before it escapes at the opposite end of the cylinder. Having the water to thus circulate, subjects it to the large filtering surface, and insures a perfect filtration. We regard this as an excellent filter.]

26,276.—T. J. Mayall, of Roxbury, Mass., for an Improvement in the Manufacture of Waterproof Hose:

I claim my improvement in the manufacture of India-rubber or gutta-percha hose or tubing, which consists in impregnating the fibrous fabric which forms the bases thereof with protective or preservative substances, and subsequently coating with India-rubber or gutta-percha, and forming the same into hose or tubing, substantially as described.

26,278.—Thos. J. Mayall, of Roxbury, Mass., for an Improvement in the Manufacture of Packing and Tubing:

I claim my new method of forming packing-hose, or tubing, and other similar articles, the same consisting in rolling or wrapping the fabric to be used around the core or mandrel by rolling or passing said core or mandrel and the fabric or wrapper together between two surfaces, one of which exerts a self-adjusting yielding pressure upon the article to be formed, while the other surface has the necessary motion imparted to it, to roll or wind the fabric used around the cord or mandrel, substantially as set forth.

26,295.—Charles W. Richter, of Madison, Ga., for an Improvement in Lamps:

I claim the use of the wick-adjuster, formed of the bar, f, provided with a toothed plate, r, at its inner end, and so arranged as to have a certain degree of longitudinal adjustment in relation with the wick-tube, u, for the purpose set forth.

[This invention relates to an improvement in that class of lamps which are designed for burning those hydro-carbons that volatilize and gasify at a low temperature, such, for instance, as a combination of turpentine and alcohol, generally known as "burning-fluid," the light or spirituous coal-oils, &c., &c. The invention is an improvement on a lamp recently patented by this inventor, the Letters Patent bearing date Feb. 22d, 1859; and its object is to more fully carry out the principle involved in the patented lamp alluded to, to wit, the keeping of the fount, and consequently its contents, at a low temperature, thereby preventing explosions, and also to prevent the charring and burning of the wick, and the regulating of the volume of flame to increase or diminish the light as may be desired.

26,305.—S. H. Swift, of Morrisville, Va., for Improvement in Apparatus for Elevating Water:

I claim the buckets, B, curved at the rear, as described, in combination with the trunnions, T, band, p, notched flanged wheel, W, roller, R, and frame, E, constructed and operating substantially in the manner and for the purpose set forth.

26,310.—I. T. Vankirk, of Frankfort, Pa., and Wm. M. Fulton, of Granberry, N. Y. for an Improvement in Lamps:

We claim the spindle, B, with its cog-wheels, D; the said spindle being confined to its place by and acted upon by a spring attached to the wick-tube, and arranged in respect to the latter as and for the purpose set forth.

26,326.—Mathew Hodkinson (assignor to Mathew Hodkinson, Jr.), of Pittsburgh, Pa., for an Improvement in Retorts for Distilling Coal-Oil.

I claim the stationary retort with a shaft armed with knives, whose edges are at right angles with the shaft passing through it, by which when motion is given to the shaft, the coal is broken and pulverized more effectually and more economically than by any other method.

26,339.—J. P. Collins, of Troy, N. Y., for an Improved Water-wheel:

I claim, first, The arrangement of the lighter plate, L, in the particular manner specified and for the purpose set forth.

Second, The arrangement in the particular manner specified of the packing ring, i, for the purpose set forth.

Third, The arrangement in the particular manner specified of the lip or projecting piece, e, of the buckets, for the purpose set forth.

Fourth, The arrangement in the particular manner specified of the regulating plate, J, in combination with the peculiar specified device for operating it, for the purpose set forth.

Fifth, The employment or use of the dividing strip, or annular ring inserted in the buckets, substantially as and for the purpose set forth.

Sixth, The employment for united use, in one wheel of the lighter plate, B, packing ring i, projecting lips or flanches, e, gage or regulating plate, J, and annular dividing plate, A, the whole being constructed, arranged and operating in the manner and for the purpose set forth.

26,342.—E. G. Cushing, of Dryden, N. Y., for an Improvement in Horizontal Water-wheels:

I claim the combination of the tubes, b, with the bolts, e, and buckets, D, the whole being constructed and arranged as and for the purpose shown and described:

[This invention relates to an improvement in horizontal center-vent wheels, and consists in having the buckets attached or applied to the wheel in a novel way, whereby the buckets may be readily adjusted so as to increase or contract the issues, and regulate the discharge of water according to the supply, or as may be desired, and also permit a bucket, in case of injury, to be removed with facility, and replaced by a new one.

26,423.—Thos. B. Fogarty, of Charleston, S. C., for an Improvement in Gas Meters:

I claim first, The combination with the water reservoir, B, and the revolving measuring drum H, of an inclined feed wheel, E, substantially as and for the purposes set forth.

Second, The arrangement of the overflow pipe, K, in combination with the water reservoir, meter chamber, and dry well, L, and pipe, N, in the manner substantially as set forth.

Third, The arrangement of the water inlet, S R, substantially in the manner and for the purposes set forth.

[This invention consists, first, in the arrangement of an inclined wheel within a separate reservoir made by elongating the case of the meter; and in fixing upon the periphery of this wheel suitable buckets which shall alternately dip into the water contained in said reservoir, and convey the same into the main reservoir, thereby maintaining a correct water-line under all ordinary circumstances, and effecting an equitable registration of gas. It consists, secondly, in preventing the meter from being overcharged; by the employment of a pipe extending up near the water-line, and communicating from the supply reservoir to the bottom of the dry well in front of the meter, so that should any attempt be made to overcharge the reservoir, the water will escape through this pipe, and rise into the dry well and stop the flow of gas completely. Also, in a peculiar arrangement of the water inlet pipe, so that it will have no communication with the body of the meter.]

26,424.—A. M. Ford and C. W. Warner, of Jericho, Vt., for an Improvement in Horizontal Water-Wheels:

We claim the construction and arrangement of the lifter, e, and band d, as shown in Fig. 1, and of the buckets, a and b, combined in the manner and for the purposes substantially as set forth.

26,458.—George H. Bronson, of Cincinnati, Ohio (assignor to himself and David Millard, of same place), for an Improvement in Hydro-Carbon Vapor Apparatus.

I claim the arrangement and combination of the zigzag folded surfaces extending over the projecting edges, F, with the projecting edges, E C C c c, &c., in each of the several cells or chambers of the impregnating apparatus, substantially in the manner and for the purpose set forth.

26,497.—Levi L. Hill, of Greenport, N. Y., for an Improvement in Hydro-carbon Vapor Apparatus:

I claim the combination, with a vaporizing vessel, of the bellows, air-receiver, and eduction pipe, as shown, or in an equivalent manner, for the purposes set forth.

[This invention consists in a certain mode of arranging and applying and combining two bellows, an air-receiver and a rotary shaft, driven by a weight and carrying tappet wheels for operating the bellows, whereby a constant supply of air is produced at a suitable uniform pressure. It further consists in a certain arrangement of the blowing apparatus in combination with the vessel containing the hydro-carbon liquid, from which the vapor for charging the air is obtained, whereby a complete apparatus for vaporizing the liquid and charging the air with its vapor is brought within a small compass, and into a very compact form.]

25,506.—James A. Lowe, of New York city, for an Improvement in Water Traps:

I claim the water trap shown, when cast without a seam (in lead or composition), as a new article of manufacture.

26,541.—H. Wilverth, of Caseyville, Ky., for an Improved Artificial Fuel:

I claim a composition formed by mixing the mentioned ingredients together, in the proportions and in the manner specified, for the purpose set forth.

[The object of this invention is to make use of those small pieces of coal, generally called "slake," and considered so entirely worthless, that they can be obtained at the mere cost of transportation. By mixing them with certain ingredients, they are converted into a good and cheap fuel.]

RE-ISSUE.

Erastus Stebbins, of Chicopee, Mass., for an Improvement in Stop-Cocks. Patented April 19, 1856:

I claim the arrangement and combination of the collar, I, flexible washer, H, washer, G, as and for the purpose described.

Second, The chambered square nut or valve, when its seat is formed in the body of the cock in the manner substantially as and for the purpose described.

ENGLAND.

1105.—William Johnson, of 47 Lincoln's Inn Fields, London, and 166 Buchanan street, Glasgow, civil engineer, for improvements in the manufacture or production of mineral oil and grease. A communication. Provisional protection only obtained.

1130.—Andrew Knox, of No. 2 Victoria Cottatges, Hertford Road, Kingsland, London, engineer, for improvements in gas-regulators. Provisional protection only obtained.

1140.—Samuel Wright, of Sudbury, Suffolk, gas engineer, for an improved gas governor or regulator.

1170.—Messrs. Defries, of Houndsditch, London, manufacturers, for improved apparatus for regulating the pressure of gas.

1177.—John Absterdam, mechanical engineer, of the city of New York, U. S. A., for improvements in impregnating illuminating gas with hydro-carbon vapor. Provisional protection only obtained.

1219.—George Allcraft, of Upper Thames street, London, for improvements in pressure-gauges.

1224.—Alexandre Réné Landre, Polydore Gras, and Antoine Louis Auguste Boucherie, of Marseilles, merchants, for distilling schist or boghead coal, and other minerals for lighting.

1244.—George John Parfitt, of Bath, city surveyor, for Improvements in Gas-Burners.

1287.—James Harmer, of St. James street, Lower road, Islington, Middlesex, for Improvements in parts of Dry Gas-Meters.

1308.—James Corn Bent, of Birmingham, gas-meter manufacturer, for Improvements in Gas-Meters.

1314.—Leon Farrene, gentleman, and Bernard Subra, Professor of Mathematics, both of Paris, for Improvements in Gas Lighting by means of direct carburators.

BELGIUM.

Sept. 20.—G. D. Vandenhaute, of Brussels, for Improvements in Gas-Meters.

Sept. 26.—O. A. David, for a Machine for Agglomerating the *menu* of Oil and other substances.

Sept. 30.—J. Leigh, for Improvements in the Purification of Oil Gas.

Oct. 8.—A. Bodart, of Brussels, for Apparatus and Process for producing Gas from Coal-Tar or other substances containing carbon.

Oct. 18.—P. Mallot, for Combination of Heavy Oils and Naptha obtained by the Distillation of Oil of Coal-tar.

PRUSSIA.

Oct. 9.—Baldemus & Grune, of Charlottenburg, for a special Apparatus for Producing Gas-Light. [How, or by what process, deponent saith not.—Ed.]

ROSIN GAS *versus* COAL GAS.

An unqualified answer to the queries of our correspondent concerning the relative value of Rosin and Coal for distillation for the production of illuminating gas, cannot be given.

A very good test is to compare the total quantity of light derivable from each; and then, in each instance, to make such allowances as are necessary in the prices of materials, labor, and cost of apparatus for the locality whence the query comes.

Below is a table, deduced from actual experiment, showing the *prime cost of materials* to produce light equal to one pound of spermaceti—taking the valuation of coal and rosin at present quotations for this market:

No. 1.	First quality foreign Cannel, cents..		0	96.1
No. 2.	Second	do. do.	1.	
No. 2.	Third	do. do.	1.06	
No. 4.	American	do.	1.60	
No. 5.	Do.	bituminous coal, best quality	0.82.3	
No. 6	Newcastle		1.24	
No. 7.	Rosin, ordinary working, cents		1.28	
No. 8.	Do.,	great care in small apparatus	0.85	

The above values represent only the cost of raw material, to which must be added the expenses for labor, repairs, and all incidentals, in each instance, to get at the cost of gas to the manufacturer.

The value of the by-products will also vary according to the materials used, and the locality.

The cannels produce a comparatively valueless coke, whilst the resins are altogether consumers of materials, without residuary products. The American bituminous and Newcastle coals present to the gas-maker the most available materials. Rosin, except in the vicinity of turpentine districts, is usually abandoned after a few years trial; the amount of labor and care necessary for the production of gas of equal density, and the great variations in the cost of material, owing to the limited production and irregular demand, render the operation a hazardous one to the pocket of the manufacturer.

Indeed, it is not improbable that it would, in all instances, be cheaper to use the rosin in its natural condition in the wood, than the manufactured resin itself, at the mere cost of collection.

Glazed Flexible Gas Tubing.—Mr. James Lyne Hancock, of No. 3 Goswell Road, London, advertises this useful gas apparatus on the last page. The advantages of this tubing have not been thoroughly appreciated here as yet, but whether on account of its expense or otherwise we know not.

Skating by Gas-Light.—The Buffaloes (N. Y.) have lighted up their skating pond with gas.

GAS-LIGHT-INGS.

ADRIAN, MICH.—No report; but we gather from outside sources that the company is doing well, earning six per cent. per annum, and applying net income to extensions. Capital is small; proportion of consumers to population very fair—above an average; price of gas remunerative.

A capitalist might do well with some of this stock. Perhaps a controlling interest might be had on application at our office.

AKRON, O.—Prompt report. Only half the capital—$10,000—in use. Consumers increasing. Price of gas low, in consequence of low cost of coal; but this company should use clay retorts. Evidently well managed, and with economy. It is time that they declare a dividend.

ALBANY, N. Y.—One of the best in the country, ranking with our N.Y. companies. It is enough to say that Paul A. Sabbaton, Esq., is engineer. He has not only no superior himself, but he has three sons, all engineers, whose equals for their years and weight, we would like to look upon. We shall speak of them hereafter. The stock of this company is not to be found in the market, being held mostly in Albany, and permanently.

ALBION, N. Y.—One of the earliest reports received. A snug little company; new, but reported doing well, and will soon pay a dividend. Works built by Frederic A. Sabbaton, one of the above-named three.

We have alluded before to a lawsuit against this company by a neighbor, who objects to the smell of tar. It is not equal, perhaps, to Frangapanni for the handkerchief, but it is good for the lungs. We advise him to stop the suit, and become a stockholder—the easiest way to abate the nuisance. In this part of speech we can help him—as Napoleon said of war, "That is our trade." Consumers fair. Price of gas low, but remunerative.

ALEXANDRIA, VA.—Prompt report. City works, unfortunately. We say unfortunately, because we think this business should be left to private enterprise. There are too many shady sides to public acts to throw a pure light on any community. However, Alexandria may be an exception. The price of coal strikes us as high—$5 25 per 2240 lbs., and Clover Hill (Va.) coal, at that. We thank Mr. White for his attention.

ALLEGHENY, PA.—Very prompt and full report. This little company is highly prosperous. They have only three-fourths of their capital in use; a fair average of consumers; large number of public lamps; price of gas low; and business increasing so rapidly as to require larger works. The stock is rarely to be had, and then at a high figure. Mr. James Ray, the superintendent, makes a very creditable report. He made, in 1858, eighteen million cubic feet of gas.

ALLENTOWN, PA.—One of our earliest and best reports. This company is, in fact, but three or four persons, viz., W. H. Blumer & Co. and N. Landenslager, who bought out Dr. William F. Danowsky, the founder and builder of the works. They use Pennsylvania bituminous coal at $7 per 2240 lbs., and made three million feet of gas in 1858. Proportion of consumers to population large. Capital in use but $40,000. We wish Dr. Danowsky would favor us with one of his able scientific communications occasionally. The readers of the AMERICAN GAS-LIGHT JOURNAL would welcome them most warmly. We thank Mr. J. M. Line for his attention.

ALTON, ILL.—Private works—but no matter for that—send us your report. We want to know what you are doing. You may be making a fortune by some secret economical contrivance or management, which others might like to adopt, without interfering with you.

ANNAPOLIS, MD.—This is a clever little corporation, rather new—twelve months old to-day—using but one-quarter of their capital, well patronized, well paid for gas, although they pay roundly for coal, $6 25 per 2240 lbs. How is it that Virginia coal is so dear? St. John's College lights one hundred burners, and the State of Maryland about three hundred more in its legislative, executive, and judicial halls, or, as they call it, The Public Circle. Uncle Sam has a pocket-edition gas-works at the Naval School here; but, like all other speculations of Uncle S., the less said about it the better.

ANN ARBOR, MICH.—Why no report?

ASTORIA, N. Y.—No response to our courteous inquiries, but we have picked up enough to satisfy us that Mr. Taylor, the superintendent, is making the most of the works, which are good, put up by Baxter, with Starr's castings. They use Westmoreland coal. The capital is small, and the company too new for results.

ATLANTA, GEO.—We regret to say we have no report from this company, although we have made two or three polite applications for them. We now make the fourth.

ATTLEBORO', MASS.—Mr. Henry Rice, superintendent, sent us, not only his report by return of mail, but also his very creditable annual report to December 1st, 1859, as soon as it was issued. They use four-fifths Pictou and one-fifth English cannel coal, costing respectively $7 and $13 per 2240 lbs., average $8 20 per ton. Price of gas, $4. Proportion of consumers fair, and increasing. Mr. Rice contracts no debts, *but pays cash for everything.* This is the secret of his excellent condition, and though the company is small, it is no less a model for a larger one. Here is the report:

Earnings,	$7,922 42
Expenses,	4,370 85
Profit for the year,	$3,551 57

TRIAL BALANCE, DECEMBER 1ST, 1859.

Dr.

Cost of Works,	$46,803 17
Office furniture,	50 00
Coal on hand,	1,511 95
Lime and coke on hand,	75 00
Gas bills, &c., due,	1,000 00
Cash on hand,	1,712 27
	$51,150 49

Cr.

Capital stock,	$45,200 00
Unclaimed dividends,	30 00
Personal accounts owing by the Company,	75 00
Balance—surplus of profit,	5,845 49
	$51,150 49

ALTOONA, MASS.—No report.

AUBURN, N Y.—We are indebted to Mr. Chase, the superintendent, for an immediate reply to our inquiries. This company makes rosin-gas, charging $7 per 1000 cubic feet, which is equal to coal-gas at $3 50. We print in another column the relative value of these two gases, that consumers of each may know what they are paying for both. This company owe nothing, and make a legitimate profit on their investment, and no more. They use but three-fourths of their capital.

AUGUSTA, GEO.—Wood and water; changed from rosin works in 1858, and operate now under Tyler's patent. Proportion of consumers fair, but there is some dissatisfaction about the quality of the gas. Another company is talked of, to make coal-gas.

AUGUSTA, ME.—Capital in use but $87,000. Considering the high price of coal—$9—they charge very moderately for gas—$4. It should be $5 to remunerate them. However, if the company are satisfied, we ought to be, surely.

BALTIMORE, MD.—Mr. Saunders sent us a prompt and full report of this, the oldest incorporated company in the United States, and one of the best therein. The stock is unsalable, because it is unbuyable: it rarely changes hands, being sought eagerly for investment. The works are in fine order, and have been lately improved by a complete and extensive laboratory. The only thing we have against them is that they stick to iron retorts. Why is this, General?

BANGOR, ME.—Prosperous company. Works might be a little better if built this year. Find iron retorts very satisfactory; they are generally liked in that climate. Quantity of gas made in 1858, about seven and a half million cubic feet. Coal used, 9-10 Newcastle, at $5.88, to 1-10 Cannel, at $13 per 2,240 lbs. A goodly heritage of consumers, at a fair price for gas. The superintendent, Mr. Perry, sent us, in the absence of the secretary, a very intelligent and satisfactory report.

BATAVIA, N. Y.—Thrifty little works, and economically managed; built by F. A. Sabbaton. They use Pittsburg coal. Some of this stock can be sold to pay about 10 per cent. per annum.

BATH, ME.—This company is indebted for its success, in a great measure, to the good management of its superintendent, Mr. John Weeks, who is a good gas-maker, and knows how to commit his knowledge to paper as well as to practice. Maryland coal is used here, costing $7 per ton. Proportion of consumers to population, small. Price of gas, fair; indeed, low, considering the cost of coal; four dollars would not be too high for the gas. Two millions of cubic feet made in 1858. Dividends moderate.

BATH, N. Y.—Now being built.

BELFAST, ME.—Rosin gas-works of small calibre and new, but, on the whole, a lively little company. Works well built; price of gas quite fair; consumers steadily increasing, and prospects generally good.

BELEEFONT, PA.—We have tried hard to get a report, but unsuccessfully as yet. We may have to resort to the spirits to find out about these close corporations.

BETHLEHEM, PA.—Ditto, ditto, all the way through.

BEVERLY, MASS.—A new, but well-built and promising works, built by Wm. L. Schoener & Co., who are quite successful in this department. For a new company, they give a good account of themselves in the Tables.

BINGHAMPTON, N. Y.—The only report we have of this company is a list of officers and the hieroglyphics in the last four columns. We would like the whole story, now that the ice is broken.

BIRMINGHAM, PA.—*Nil.*

BORDENTOWN, N. J.—A very complete report, for which we thank Mr. J. H. Wheeler. The works are a little too good for the town, (if anything can be too good for New Jersey)—we mean for *the size* of the town—and are well managed. They divide six per cent., which is the legal interest, and lay up something for a rainy day. They use Pittsburg coal, at $7 per ton, and certainly charge moderately for the gas, of which they made 962,000 feet in 1658. We have heard the Bordentown gas well spoken of.

BOSTON, MASS.—The second American town that adopted gas-light, and one of the most prosperous companies.

NEWARK, N. J.—This company has declared a semi-annual dividend of five per cent., and reduced the price of gas to $3 per 1000 feet, to take effect after the present quarter.

LEAVENWORTH, KANSAS, LIGHTED BY GAS.—The *Leavenworth Daily Times*, of 5th December, reports that the works were nearly completed, and gas would be let into the mains about Christmas Day. The premises occupied by the gas-works are 100 by 110 feet, fronting on Main street, near the Missouri River. Present capacity of the works, 25,000 feet, with the ability to double it with ease, and to supply the Fort, two miles distant, when necessary. The company have laid two and a half miles of mains on Main, Seneca, Choctaw, Delaware, Shawnee, Miami, Cherokee, Third, Fourth, Fifth, Sixth, and Seventh streets. It is also in contemplation to light fifty street lamps, and to illuminate the levee. The castings were made in Cincinnati, and the works are said to be well built. The gas-holder is forty feet in diameter; three branches of three retorts each. Coal is found in the immediate vicinity, and costs twenty cents per bushel. Mr. O. G. Leopold is the engineer, and is spoken of in high terms of praise. Other towns in Kansas will soon be lighted, and then Nebraska will follow suit in her thriving settlements.

THE HORRORS OF BURNING-FLUID.

THIS month's narrative opens with the almost entire destruction of a whole family in Chicago, Ill., by this infamous fluid. As usual, the women and children were the immediate sufferers.

A family, comprising a mother, named Margaret Seger, her two children—Bernard, aged sixteen months, and Leopold, aged two and a half years—and the grandmother, Catharine Soute, were sitting round a table, in the kitchen, at about six o'clock on Thursday evening, November 24th. The father was asleep in the front room. The light was burning low, and the mother arose to fill it, without extinguishing it. The flame from the lamp communicated with the fluid in the can, and in an instant it exploded, covering the table with the blazing liquid, setting fire to the curtains and windows, and enveloping all in flames. Their screams awoke the husband, who, with the help of his neighbors, succeeded in extinguishing the fire, but not until all were burned. The youngest child, Bernard, was horribly burned about the face, and died at four o'clock next morning. The second child was badly burned in the eyes, and was thrown into convulsions. The mother is very seriously burned in the face and upon the arms, but it is thought she may recover.

On the morning of December 2d, Sarah Mooney, aged twenty-five years, residing in Mercer street, near Canal, while filling a fluid-lamp, upset the fluid on her clothes, which immediately took fire. The poor woman instantly ran into the street, where the flame enveloped her person. Deputy Sheriff Sinclair succeeded in extinguishing the flames, but not before the woman was very severely burnt. She was taken to the New York Hospital, where the physicians gave it as their opinion that she would die before morning.

A little girl named Kirkwood was burned by the explosion of a camphene lamp at No. 41 Mangin street, and will probably die of her injuries.

Thomas Dixon died at the City Hospital, Brooklyn, N. Y., on Wednesday, December 14th, from burns received by upsetting a lamp containing burning-fluid, a few days ago, at the Globe Hotel.

A sad accident occurred at No. 44 Bleecker street on Tuesday morning, December 27th. A servant, named Mary Govlin, accidently set fire to her clothes while trimming a burning-fluid lamp, when a fellow-servant, named Margaret Dunlevy, came to her assistance, and, in her endeavors to extinguish the flames, she set fire to her own dress, and was so severely burned that she died in a few hours afterwards. Deceased was twenty-seven years of age.

A writer in the *Troy Daily Times*, says:

"Almost every issue of your paper records some accident resulting from the improper management of burning fluid. Burning fluid is not only combustible, but, when warm, rapidly evaporates, generating a gas as explosive as gunpowder, and requires to be handled and used with great care. It is made by dissolving a portion of camphene in a much larger portion of high-proof alcohol, being, in fact, composed of fully seventy-five per cent. of almost absolute alcohol, one of the most volatile articles, when heated, known to chemistry. Burning fluid, colored yellow or red, and called phosgene, chemical oil, &c., is sold all over the country, and warranted not to explode. The public should be on their guard, and place no reliance on such statements. The article is essentially the same, under whatever name it is sold, and will, when warm, generate a gas which, on contact with a flame, will explode. Let every one who uses burning fluid make a note of this."

The papers throughout the country are full of accidents resulting from the use of this infamous stuff, and yet the traffic in it is increasing, and, we regret to add, profitable.